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UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF INDIANA
INDIANAPOLIS DIVISION

IN RE: METHOD OF PROCESSING)	
ETHANOL BYPRODUCTS AND)	1:10-ml-2181-LJM-DML
RELATED SUBSYSTEMS ('858))	
PATENT LITIGATION)	
)	
THIS DOCUMENT RELATES TO:)	
)	
1:10-cv-0180-LJM-DML)	
1:10-cv-8001-LJM-DML)	
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1:10-cv-8009-LJM-DML)	
1:10-cv-8010-LJM-DML)	
1:10-cv-8011-LJM-DML)	
)	

**PLAINTIFFS' MEMORANDUM IN OPPOSITION TO DEFENDANTS' JOINT
MOTION FOR SUMMARY JUDGMENT OF INVALIDITY AND TO DISMISS
PLAINTIFFS' REQUEST FOR PROVISIONAL REMEDIES AND ENHANCED
DAMAGES FOR WILLFUL INFRINGEMENT**

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INTRODUCTION

David Cantrell and David Winsness developed innovative methods of recovering corn oil in ethanol plants – methods that have been widely praised and nearly universally adopted by the ethanol industry. These innovations were consistent with Plaintiffs’ strong record of developing techniques for recovering valuable agro-industrial commodities from byproducts previously viewed as waste. Defendants here – who collectively dominate the market for corn oil recovery systems – now seek a summary judgment to deprive Plaintiffs of patent protection. But the validity of Plaintiffs’ patents is subject to an array of deeply contested issues of fact that can only be decided by the ultimate trier of fact, and Defendants’ motions for summary judgment should therefore be denied.

The ethanol industry has been aware of the presence of valuable oil in corn for over fifty years. Prior efforts to extract that oil focused on recovery of the oil prior to fermentation, or recovery from the thin stillage prior to evaporation, or even recovery by solvent extraction. But these methods were not technically successful, were not commercially viable, and were never adopted by the industry. That is why Plaintiffs’ pioneering invention revolutionized the field of industrial corn oil extraction.

Broadly speaking, Plaintiffs’ invention teaches the use of centrifuges or other mechanical processes to recover corn oil from concentrated thin stillage under defined moisture, pH and temperature conditions. It is a solution that was completely counterintuitive at the time of the invention – in part because the increased viscosity of concentrated stillage and high concentration of solids was thought to make oil extraction more difficult. And no one could have foreseen Plaintiffs’ innovation because of the inherent unpredictability of centrifuging complex industrial streams.

Nevertheless, Defendants raise a laundry list of invalidity arguments. First, they claim that Plaintiffs' patents are anticipated. But Defendants' key references all fail to disclose crucial limitations of the patents-in-suit, and therefore cannot anticipate them. Moreover, all the anticipation references were before the Examiner when the patents were issued. In a last-gasp attempt to salvage their anticipation argument, Defendants insist that one reference contains a typographical error, and should be read to disclose the opposite of what it actually says. Setting aside the fact that this argument was never raised until the second round of summary judgment motions, that Defendants' own experts describe it as conjecture, and that it is supported only by an irrelevant declaration of a co-inventor who was paid \$2,000, whether the reference contains an error plainly raises genuine issues of material fact that preclude summary judgment.

Alternatively, Defendants characterize the patents-in-suit as invalid for obviousness because the equipment used to practice the inventions was already known. Defendants' argument fails as a matter of law, since the Federal Circuit has explicitly rejected the suggestion that an invention might be deemed obvious solely on the grounds that each of its individual elements was known in the prior art. It also raises a host of fact disputes, since the prior art references upon which Defendants rely either teach away from Plaintiffs' solution or relate to non-analogous (and therefore inapplicable) art. Plaintiffs' technology has transformed the ethanol industry by introducing a new revenue stream for many plants – a revenue stream that may have saved many of those plants from financial ruin. Unsurprisingly, then, secondary considerations of non-obviousness, including commercial success, long-felt need, failure of others, and industry praise, overwhelmingly compel a finding that the invention was not obvious.

Defendants' claim of invalidity under Section 102(b) is similarly unavailing. Defendants argue that the invention was offered for sale more than one year prior to Plaintiffs' patent. But

that argument is based on a sharply disputed question of fact – whether a letter that lacks most of the elements of an offer for sale, fails to describe equipment or the patented method, and does not require implementation of the patented methods was an “offer for sale.” And even if it were an offer for sale, a fact-finder could easily find that the purpose of the offer was experimental and the invention was not ready for patenting. Defendants cannot obtain summary judgment when these critical facts remains in dispute.

Finally, Defendants claim that the patents-in-suit are invalid for failing to satisfy Section 112’s “written description, enablement and definiteness” requirements, that they are invalid for failing to name Mr. Barlage as an inventor, that Plaintiffs are not entitled to provisional rights, and claim that Defendants cannot be found to have willfully infringed the patents. None of these claims is ripe for summary judgment. They are unsupported by Defendants’ own experts, irreconcilable with this Court’s claim construction rulings, directly contradicted by the plain language of the patents, or simply inconsistent with credible testimony to the contrary.

For the foregoing reasons, there remain many genuine issues of material fact that can only be resolved by a jury. Plaintiffs therefore respectfully request that the Court deny Defendants’ Motions.

RESPONSE TO DEFENDANTS’ STATEMENT OF MATERIAL FACTS

I. Background

¶ 2. Disputed. This statement of fact mischaracterizes CleanTech’s position on what a person of ordinary skill in the art (“POSA”) would be for this technology. CleanTech’s position is that a POSA is either: (i) someone who possesses at least an undergraduate degree in chemical engineering or similar educational background, with a few years of experience in separation techniques, including in ethanol plants; or (ii) someone who has several years of experience with separation techniques associated with ethanol plants, designing systems for separation of

materials found in ethanol plants, or a similar work history. A POSA does not, as Defendants claim, necessarily have experience in “animal fat rendering or vegetable oil processing. (SOF ¶ 21.)¹

¶ 3. Disputed. While CleanTech agrees that a POSA knows that “oil” is a type of “fat,” there are many fats that are not oil and have physical properties very different from those of oil, and the terms are not necessarily interchangeable. (SOF ¶ 22.)

¶¶ 4-7. These statements of fact are incomplete. Oil extraction methods vary depending on the physical properties of the material or substance which contains the oil to be recovered. (SOF ¶ 32-52.) Further, while there are a finite number of known separation methods generally, there are at least 16 alternative locations in a dry-mill ethanol production process from which oil could be recovered, and many potential processes that could be used to recover oil, depending upon the stream from which the oil is to be recovered. (SOF ¶ 34) Further still, separation techniques may be used in combination to create “an infinite number of different types of separation techniques.” (SOF ¶ 35.)

II. Centrifugation

¶¶ 12, 13. Disputed. Predicting whether the force applied by a centrifuge will help break an emulsion is both application-specific and plant-site specific because each system is unique, and while centrifuges have been used to separate fats and oil in various applications, their impact is not predictable: in some cases centrifuges can help break some emulsions, in other cases they will actually create emulsions. (SOF ¶ 38-43.)

¶¶ 14-17. Disputed. While it was known that some amount of oil could be seen, stability is not a binary condition, but rather a continuum, and the stability of the concentrated thin

¹ Plaintiff’s Statement of Material Facts in Dispute is cited as “SOF ¶ ____”).

stillage stream varies based on the design of the plant. (SOF ¶¶ 38-43.) There are many emulsifying agents that promote the enhanced stability of the emulsion for a typical concentrated thin stillage stream, including proteins, fine powder, and starch. (*Id.*) Furthermore, formation of an oil layer in the test tube after a spin test is not a strong predictor that a centrifuge would work to separate oil, and in-plant testing is necessary to confirm that the centrifuge can separate the oil. (SOF ¶¶ 119, 123, 131)

III. Prior Art Methods Were Unsuccessful

¶¶ 35-38. Disputed. These statements of fact are inaccurate. Rosten does not disclose the use of a mechanical process to recover oil from concentrated thin stillage. Rosten discloses a two-step method for separating oil from a moisture-rich by-product of ethanol production called “distillers’ thin slop;” requiring a first centrifuge to remove both heavy and suspended solids, then a second centrifuge to separate oil from an oil-water emulsion. “Thin slop” is not concentrated thin stillage. An oil-water emulsion is not thin stillage. (SOF ¶¶ 53-58)

¶¶ 39-40. Disputed. The paragraphs are not supported by any evidence other than the testimony of GEA’s corporate representative, and are not corroborated by any documentary evidence. Furthermore, these statements of fact are incomplete to the extent they do not disclose the efficiency of the process GEA used at CVEC in 1998, or the amount of corn oil recovered. Whether it was profitable to recover oil from ethanol plants in 1998 is also disputed. (SOF ¶¶ 9, 14-20, 23-25) (SOF ¶¶ 171-178)

¶¶ 46-51. CleanTech disputes these paragraphs to the extent they imply that a POSA could read claims 19 and 20 of the Prevost reference to apply to “a syrup stream containing less than 15 wt. % water” rather than “15 wt. % fat,” which is the actual claim language. (SOF ¶¶ 63-7063-70) Dr. Eckhoff testified that a person of ordinary skill would understand from these repeated references that Prevost disclosed extracting oil from a product with 15% water and

perhaps thought this to be the optimal condition for oil extraction. (Ex. 1, Expert report of Dr. Steven Eckhoff in Rebuttal to the Expert Report of Messrs. Jon Van Gerpen, Ph. D.; Ken Kyte and Robert G. Riley, Jr. (“Eckhoff Van Gerpen Rep.”) at ¶¶ 112, 115). And years after filing the ‘808 application, Prevost filed another, also containing a claim element of “a syrup having a water content of 15% wt. % or less.” (Ex. 2, U.S. Patent App. No. 10/395,547 (“‘547 Application’”) at Claim 1). Furthermore, Defendants’ own experts are not uniform on how they would reform claim 19. Reilly would read into the claim that “some of the oil” is removed and would change “15 wt % water” to 40-55%. (SOF ¶ 68, Ex. 3, Deposition Transcript of Peter Reilly, Ph D. (“Reilly Dep.”) at 147:12-23, 148:14-18). Harris would correct 15% to “30, 40 percent water perhaps,” although he concedes this is “[j]ust an educated guess.” (SOF ¶ 68, Ex. 4, Deposition Transcript of Michael T. Harris (“Harris Dep.”) at 119:8-11). Yancey would read in the term “a portion of” into claim 19, and substitute “oil” for “water” in the phrase “15 wt % water.” (SOF ¶ 68, Ex. 5, Deposition Transcript of Mark Yancey, (“Yancey Dep.”) at 118:14-119:12; 125:3-11). Van Gerpen notes that “there’s an infinite number of other options,” but believes that Prevost meant “fat” instead of “water.” (SOF ¶ 68, Ex. 6, Deposition Transcript of Jon Van Gerpen (“Van Gerpen Dep.”) 144:10-24).

¶ 52. CleanTech disputes this paragraph as it mischaracterizes and contradicts the Prevost application prosecution history, and is not supported by admissible evidence. Furthermore, Claims 19 and 20 of the Prevost application were not before the patent examiner when she rejected the patent, as Prevost was required in the first office action to elect between one of the three distinct inventions in his application and elected the invention disclosed by claims 1-7 of the application. Those claims focused on the recovery of oil from either thin stillage or wet distillers grains, but not concentrated thin stillage. (SOF ¶ 60)

A. Prior Art Cited by Defendants

¶¶ 53--61. These statements of fact are disputed and incomplete. A POSA would not have expected that using a centrifuge on concentrated thin stillage at an ethanol plant in 2003 would have resulted in the recovery of corn oil. (SOF ¶ 38-52) The method referenced by Defendants and used by the inventors at Case Farms was a fundamentally different process. (SOF ¶¶ 84-86) U.S. Patent No. 2,325,327 issued to Lachle in 1943 teaches that, unlike animal materials – which do not require additional steps such as removal of solids material – additional steps involving multiple centrifuges are necessary when recovering oil from corn in order to remove the starch which would otherwise act as an emulsifying agent. (SOF ¶ 83.) Later publications similarly teach that fish rendering byproducts are typically free of solids and emulsions prior to centrifugation, requiring simpler processes to recover oil. (SOF ¶ 71-78.) Differences between plant and animal cells also make extraction of oil from animal byproducts different from extraction of oil from plant byproducts. (SOF ¶ 71-78; Ex. 1, Eckhoff Van Gerpen Rep. ¶ 58). And it is not predictable whether a proposed method will work for a particular application until it is tested for that application. (SOF ¶¶ 30-52, 131.)

¶¶ 62-64. Disputed. A POSA would understand that plant and animal oil/fat recovery systems are so dissimilar that knowledge of one system would have little relevance to the other. (SOF ¶ 71-78.) As Dr. Eckhoff explained, “just because it worked on fish meal, or some other type of product, doesn’t mean that it’s going to work for . . . concentrated thin stillage.” (SOF ¶ 78, Ex. 8, Deposition Transcript of Steven R. Eckhoff, (“Eckhoff Dep.”) at 349:19-22).

IV. Background of the Named Inventors

¶ 68. CleanTech disputes this statement of fact to the extent it claims that Greg Barlage is a co-inventor of the patents in suit. By his own admission, Mr. Barlage is not an inventor of the patents-in-suit, and all work and testing that he conducted was done at the direction and

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instruction of Cantrell and Winsness. (SOF ¶¶ 94-128).

¶¶ 69-71. These statements of fact are disputed and they are not relevant to any claim presented in the motions for summary judgment.

¶¶ 72-80. CleanTech disputes these paragraphs to the extent Defendants rely on them to establish the Case Farms system as prior art to the patents-in-suit. The VDT Case Farm system taught away from the patents in suit in a number of respects. First, it taught the addition of water – in the form of steam – upstream of the separation step. Second, it removed the solids before centrifugation. Third, it utilized a post-separation centrifugation step. In all three respects, the VDT Case Farm system was completely at odds with the teachings of the patents in suit. (SOF ¶¶ 84-86.) Furthermore, the Case Farms system was a poultry processing system and did not process vegetable byproducts, as the patents-in-suit do. (Id.)

V. Inventive Activity

¶ 89. CleanTech disputes this paragraph insofar as it suggests that Mr. Barlage ran the initial tests without input from Mr. Cantrell or Mr. Winsness. Mr. Barlage testified that he had no input into the initial test attempt to separate oil from thin stillage; and that either Mr. Cantrell or Mr. Winsness provided the instructions. (SOF ¶¶ 94-128).

¶¶ 90-91. Disputed. Mr. Barlage testified that the results of the June 2003 bench test were inconclusive and were “nowhere close” to showing a reasonable probability of success that corn oil could be extracted from concentrated thin stillage from the back end of an ethanol plant. (SOF ¶ 119.)

¶ 92. CleanTech objects to this paragraph as an unsupported statement of an ultimate legal conclusion. (SOF ¶ 119.)

¶ 95. This statement of fact is incomplete. Although there was no written confidentiality agreement between CleanTech and Agri-Energy at this time, Agri-Energy agreed to work with

the inventors and their research team confidentially during the research and development process. (SOF ¶ 109) Furthermore, while neither Mr. Cantrell nor Mr. Winsness were present at the July 10, 2003 test, Mr. Cantrell gave Mr. Barlage specific instructions for this testing, including the location from which to obtain syrup test samples, and how to process them through the test machine. (SOF ¶ 126-127.)

¶ 96. CleanTech disputes the statement that the method eventually claimed in the patents-in-suit was performed on July 10, 2003 using a gyro. The test was a failure, as the gyro quickly clogged and had to be repeatedly disassembled and cleaned. Due to the repeated clogging of the test centrifuge, it took about six hours for Mr. Barlage to run a mere eight quarts through the test gyro machine. (SOF ¶¶ 127-128) The cited statement by Mr. Winsness was made in 2005, after the invention had been proven to work. *See also* Resp. to ¶¶ 14-17.

¶ 97. CleanTech disputes paragraph 97(b) insofar as it is an unsupported statement on an ultimate legal conclusion: whether the July 11, 2003 draft letter, or the later July 31, 2003 letter, constituted an offer for sale. (SOF ¶ 138, 140)

¶ 98. This statement of fact is incomplete. The diagram completed on July 22, 2003 does not specify a process, and shows only the most basic generic hardware applied to an unidentified “Incoming Product.” (SOF ¶ 143.) The diagram is not sufficiently specific to enable a person skilled in the art to practice the methods of the invention claimed in the patents-in-suit. (SOF ¶ 124.) The diagram also does not define what the “Incoming Product” is, and so does not show that the “Incoming Product” is concentrated thin stillage. (SOF ¶¶ 143-144, Ex. 9, Deposition Transcript of Jerry Dyer (“Dyer Dep.”) at 220:17-222:15).

¶ 100. Disputed to the extent Defendants suggest the sales meeting related to sales of corn oil recovery systems. (SOF ¶ 87).

VI. There Was No Offer for Sale Prior To the Critical Date

¶ 105. This statement of fact is incomplete. Agri-Energy admitted that it has no recollection of when it received the July 22, 2003 figure, has no record of receiving it, and “assume[s]” that it was received on August 19, 2003. (SOF ¶ 145)

¶ 106. Disputed. Mr. Cantrell did not intend the July 31, 2003 letter to be an offer to sell an apparatus because Mr. Cantrell and Mr. Winsness were not ready to sell a full-scale, permanent, or even operative corn oil extraction system. Accordingly, the letter did not contain a signature line for Agri-Energy to form a binding agreement. Furthermore, the July 31, 2003 letter did not contain terms concerning payment timing or instructions, dates and terms of delivery, terms pertaining to financing, or any specifics of what might ultimately be delivered to Agri-Energy. [REDACTED]

[REDACTED]
[REDACTED] (SOF ¶ 137-138, 140.)

¶¶ 107-108. These statements of fact are incomplete and disputed. The removal of oil has no effect on DDGS price. In fact, certain animal feed markets prefer or require reduced-oil DDGS, allowing ethanol plants to expand into additional markets. (SOF ¶¶ 174-181.) An enormous market for corn oil has existed for decades, with corn oil being used as an alternative to yellow grease in the bio-diesel industry, or as an additive to animal feed. (SOF ¶¶ 174-181.)

¶ 114. CleanTech disputes this paragraph to the extent Defendants imply that Mr. Cantrell, Mr. Winsness, or Mr. Dyer believed that the August 19, 2003 letter was an offer for sale. (SOF ¶ 138, 140)

¶¶ 116-117. Disputed. Agri-Energy’s use of the centrifuge to recover oil was done at the direction and instruction of the inventors. The inventors instructed Agri-Energy with respect to the assembly, placement or installation of the key parts of the oil recovery test, and continually

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monitored the testing. (SOF ¶ 148-152.) [REDACTED]

[REDACTED] (SOF ¶ 151.) During the test in 2004, through frequent phone calls with Agri-Energy, the inventors continually monitored the testing of the corn oil extraction process and collected data from the testing. Indeed, Agri-Energy and Alfa Laval provided data of the 2004 in-plant testing to the inventors for review. (SOF ¶ 148-152.)

¶¶ 119-120. Disputed. Mr. Cantrell and Mr. Winsness have not stated that any prior method for recovering oil is the same or similar to the methods claimed in the patents-in-suit. CleanTech also objects to these paragraphs as irrelevant to the legal issue of whether the patents-in-suit are obvious in view of the VDT Case Farms system. (SOF ¶ 84-86)

VII. Corn Oil Recovery Had Long Been a Profitable Proposition for Ethanol Plants

¶¶ 121-122. CleanTech disputes the allegation that it began offering its method for sale in 2003, or the suggestion that its system sales did not start increasing until 2007. (SOF ¶ 137-138, 140, 195-197). CleanTech also disputes the statement that widespread adoption of the patented process would have flooded all available markets for the recovered corn oil. (SOF ¶ 174) The additive feed market was not the only market into which the recovered oil could have been sold. Inedible corn oil is a substitute to yellow grease, and could be sold in many of the same vast markets. (SOF ¶¶ 173-181.)

¶¶ 123-125. CleanTech disputes that corn oil sold for conversion into biodiesel is sold at a much higher price than it could command for animal feed. Corn oil is sold as a commodity for any purpose. (SOF ¶¶ 178-181; Ex. 6, Van Gerpen Dep. at 21:17-22:14; Ex. 11, Deposition Transcript of Byron Gunner Greene (“Greene Dep.”) at 45:9-46:5; Ex. 12, Deposition Transcript of Bruce A. Babcock (“Babcock Dep.”) at 189:3-8) CleanTech also disputes these paragraphs to the extent they are based on the calculations of Defendants’ expert, Bruce Babcock. [REDACTED]

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[REDACTED]

[REDACTED]

[REDACTED] (SOF

¶¶ 173-181.)

VIII. Facts Alleged by Defendants Not Relevant to the Instant Summary Judgment Briefing

¶¶ 128-179. CleanTech objects to these paragraphs as they are not relevant to any of the issues presented in Defendants' Joint Motion for Summary Judgment. Although it appears that many of these alleged facts are stated in support of Defendants' inequitable conduct defense, the Court has severed that issue from this round of summary judgment briefing. (MDN 898, Order Regarding Briefing of Inequitable Conduct Defense for the '858 Patent Family ("Order re Inequitable Conduct Defense '858 Family") at 2.) CleanTech reserves the right to dispute the factual allegations in these paragraphs during that later round of summary judgment briefing.

IX. The Claimed Methods

¶ 181. This statement of fact is incomplete. While Mr. McKenna did initially testify that he arrived at the greater than 50 percent rule "arbitrarily," he corrected himself later in the same deposition, confirming that he arrived at the greater than 50 percent rule after considering the language of the patent specification and the operative claim construction. (Ex. 13, Deposition Transcript of John V. McKenna ("McKenna Dep.") at 358:13-24.) Defendants' Expert, David Rockstraw, has consistently stated that he also reads the Court's claim construction to mean that "a process recovering 51% of the oil present in the stream entering the oil-recovery centrifuge meets the patent claims." (SOF ¶ 25; Ex. 14, Rebuttal Expert Report of David A. Rockstraw, Ph. D., P.E. ("Rockstraw Rebuttal Rep.") at ¶4; Ex. 15, Deposition Transcript of David A. Rockstraw Ph. D., P.E. ("Rockstraw Dep.") at 152:17-25.)

(Ex. 16, Deposition of Kevin Kreisler dated 6/26/2012 (“Kreisler 6/26/2012 Dep.”) at 26:23-24; 28:20-29:1). GreenShift and its subsidiaries focus on developing and commercializing technologies that promote more efficient use of natural resources. (*Id.* at 27:15-22)

2. Greenshift has a track record of identifying new market opportunities in long-established industries, and of developing valuable technology for market participants to exploit those opportunities. (Ex. 18, David Winsness Declaration (“Winsness Decl.”) at ¶ 7). For example, GreenShift has developed and continues to develop innovative technologies relating to corn oil extraction, adhesives, and paper. (Ex. 18, Winsness Decl. at ¶¶ 8-10).

3. In the field of corn oil extraction, GreenShift’s technology has created a new revenue stream for the vast majority of the ethanol plants on the market. (*Id.* at ¶ 8). Without that revenue stream, many of those plants would be unprofitable. (*Id.* at ¶ 8). GreenShift continues to contribute to the field through its research on the improvement of corn oil extraction yields. (*Id.* at ¶ 8). GreenShift, through GS CleanTech now holds 6 patents in this area, including United States Patent Nos. 7,608,729; 7,601,858; 8,008,517; 8,008,516; 8,168,037; and 8,283,484. GS CleanTech also hold an additional 6 patent applications in this area, including App. Ser. Nos. 11/908,891; 12/512,708; 13/450,991; 13/450,997; 13/185,841 and 14/080,071. (*Id.* at ¶ 8).

4. GreenShift is also developing technologies to efficiently recover new materials from ethanol plant co-product streams and refine them for use as biopolymers and bio-adhesives. (Ex. 18, Winsness Decl. at ¶ 9). These technologies will also create new revenue streams for corn ethanol facilities. (*Id.* at ¶ 9).

5. In the paper industry, GreenShift is developing and commercializing technologies that efficiently recover lignin from certain manufacturing co-product streams. (Ex. 18,

Winsness Decl. at ¶ 10). Lignin is an essential component of many consumer products, such as glue and paint primers. (*Id.* at ¶ 10). Greenshift’ technology allows paper mills to extract the lignin from their waste streams and commercialize it. (*Id.* at ¶ 10). Historically, that lignin would otherwise have been burned by the mills as a low value fuel. (*Id.* at ¶ 10). GreenShift has 1 pending patent application relating to this technology, and plans to file 2 additional applications for this technology shortly. (*Id.* at ¶ 10).

II. THE PATENTS-IN-SUIT AND BACKGROUND OF THE INVENTION

A. The Patents-In-Suit

6. Four of Plaintiffs’ asserted patents are relevant to this motion: Ex. 19, United States Patent Nos. 7,601,858 (“‘858 patent”), Ex. 20, 8,008,516 (“‘516 patent”), Ex. 21, 8,008,517 (“‘517 patent”), and Ex. 22, 8,283,484 (“‘484 patent”) (collectively, the “patents-in-suit”).²

7. David Cantrell (“Cantrell”) and David Winsness (“Winsness”) are the inventors of all four of the patents-in-suit. *See* (Ex. 19, ‘858 patent; Ex. 20, ‘516 patent; Ex. 21, Ex. 21, ‘517 patent; Ex. 22, ‘484 patent).

8. The ‘858 patent issued from Application No. 12/559,136 (the “‘136 Application”). It claims priority to a provisional application filed on August 17, 2004. The ‘‘516, ‘517, and ‘484 patents issued from applications that are continuations from the ‘136 Application. (Ex. 23).

² CleanTech’s ‘037 Patent is not addressed here but is the subject of a separately filed motion. *See* MDN 985, GS CleanTech Corporation’s Motion for Summary Judgment of Infringement of U.S. Patent No. 8,168,037

B. Background of the Invention

9. The patents-in-suit are directed to recovering corn oil from the by-products of the dry-grind or “dry-milling” method used by ethanol plants to produce ethanol. (Ex. 19, ‘858 Patent, 1:19-37; Ex. 1, Eckhoff Van Gerpen Rep.”) at ¶¶ 31-32).

10. “Dry mill” ethanol facilities grind the corn kernel in its entirety and subject it to a cooking process to convert it into a liquefied mash. Enzymes are then added to break down the starch into sugar. ((Ex. 24, Deposition of Dale Monceaux (“Monceaux Dep.”) at 17:14-25; Ex. 25, Expert Report of Michael Harris (“Harris Rep.”) 4-5; Ex. 3, Reilly Dep. at 23:10-14, 40:4-9, 56:19-58:21, 107:24). Yeast is then added to the corn “mash” to convert the sugar to ethanol during fermentation, and the mash is processed through a distillation system to recover the ethanol. *Id.*

11. The patents-in-suit explain that “dry milling” is “typically practiced using corn.” (Ex. 19, ‘858 Patent 1:35-38). The “process utilizes the starch in the corn . . . to produce the ethanol through fermentation.” (*Id.* at 1:38-40). This process “creates a waste stream” commonly referred to as “whole stillage.” (*Id.* at 1:40-41). Whole stillage is then separated into two products: “distillers wet grains” and “thin stillage.” (*Id.* at 1:41-43). *See also* (Ex. 1, Eckhoff Van Gerpen Rep. ¶¶ 33-35; Ex. 6, Van Gerpen Dep. at 34:2-36:25; Ex. 3, Reilly Dep. at 57:2-59:11; Ex. 4, Harris Dep. at 64:7-65:18).

12. As the patents-in-suit explain, “[d]espite containing valuable oil”, stillage was, prior to the inventions in the patents-in-suit, “treated as waste and used primarily to supplement animal feed.” (Ex. 19, ‘858 Patent 1:43-45). This was accomplished by drying the thin stillage and then recombining it with the distillers’ wet grains before once again drying the mixture to form a product called “distillers’ dried grains with solubles” or “DDGS.” (*Id.* at 1:43-47); (*See*

also Ex. 1, Eckhoff Van Gerpen Rep. ¶¶ 33-35; Ex. 25, Harris Rep. at 6; Ex. 4, Harris Dep. at 64:13-65:7).

13. The patents-in-suit describe past, unsuccessful efforts to extract corn oil from the ethanol production streams. One failed approach sought to “separate the oil from the thin stillage before the evaporation stage.” (Ex. 19, ‘858 Patent 1:54-56). This approach, however, “merely create[d] an undesirable emulsion.” (*Id.* at 1:56-58). The process was also economically inefficient, because it required “considerable capital to purchase the number of centrifuges required” to process the large volume of thin stillage. (*Id.* at 1:59-63). Another failed approach used filters to screen out solids, but these filters were “susceptible to frequent plugging and thus disadvantageously increase[d] the operating cost” of an ethanol plant. (*Id.* at 1: 64-2:10).

14. The patents-in-suit contrast these past experiences with the novel approach taken by the inventors to extract corn oil. First, they identify the specific byproduct from which one should recover oil: thin stillage. (Ex. 19, ‘858 Patent 2:24-48). Next, the patents-in-suit disclose concentrating the thin stillage by reducing its moisture content through evaporation to form concentrated thin stillage or “syrup.” (*See generally*, Ex. 19, ‘858 Patent; Ex. 1, Eckhoff Van Gerpen Rep. ¶¶ 35-36). Finally, the patents-in-suit disclose mechanically processing the concentrated thin stillage – a step that can be accomplished with a centrifuge, for example. (*Id.* at 3:1-2).

15. The patents-in-suit disclose two of the primary advantages of this process: it allows for the recovery of corn oil, and it allows for greater efficiency in drying the syrup and distillers wet grains. (*Id.* at 4:8-13).

16. The patents-in-suit disclose particular embodiments of the process. These include embodiments involving a press/extruder, a decanter centrifuge, a screen centrifuge, a “disk-stack

centrifuge,” “a nozzle bowl disk stack centrifuge,” and a “horizontal centrifugal decanter.” (Ex. 19, ‘858 Patent 2:62-65; 3:24-28). The patents-in-suit also describe feeding the concentrated thin stillage into the centrifuge at a temperature between about 150 and 212 degrees F and ideally at 180 degrees F (*id.* at 3:62-64), and at a pH between about 3 and 6 and ideally between 3.5 and 4.5 (*id.* at 3:65-65). Finally, the patents-in-suit describe evaporating the thin stillage until it has a moisture content of between 15% and 90%, more preferably between 30% and 90%, and ideally between 60 and 85%. (*Id.* at 3:65-4:2; *see also* Ex. 22, ‘484 patent at 4:10-14; Ex. 21, ‘517 patent at 4:7-11).

17. Mechanical techniques for processing solutions with a moisture content of between 15-40% were known in the art at the time of the filing of the provisional patent application that led to the patents-in-suit. (Ex. 15, Rockstraw Dep. at 128:14-131:13; Ex. 6, Van Gerpen Dep. at 146:9-147:19; Ex. 4, Harris Dep. at 106:6-107:2; Ex. 26, Deposition of Neal Hammond (“Hammond Dep.”) at 191:11-20; Ex. 168, Prevost ¶¶ 12, 15, 16, 33-35 and 38; Ex. 1, Eckhoff Van Gerpen Rep. ¶¶ 87-122; Ex. 3, Reilly Dep. at 148:24-25; Ex. 5, Yancey Dep at 128:13).

18. The patents-in-suit claim variations on this method of recovering oil from ethanol plant byproducts. Claim 1 of the ‘858 Patent is illustrative:

A method of recovering oil from thin stillage, the method comprising, in sequence:

evaporating the thin stillage to remove water and form a concentrated byproduct; and

recovering oil from the concentrated byproduct by heating and mechanically processing the concentrated byproduct to separate the oil from the concentrated byproduct, wherein the concentrated byproduct has a moisture content of greater than 30% and less than 90% by weight

(Ex. 19, ‘858 Patent 5:65-6:7).

19. The claims of the '516 Patent and '484 Patent are similar but add further limitations based on the moisture content of the concentrated thin stillage, its pH, and its temperature. (Ex. 20, '516 patent at 6:10-52; Ex. 22, '484 patent 6:8-8:37; *see also* Ex. 21, '517 at 6:32-39).

20. [REDACTED]
[REDACTED] (Ex. 24, Monceaux Dep. at 124:17-130:22; Ex. 5, Yancey Dep. at 24:8-25:8; Ex. 3, Reilly Dep. at 66:8-67:19; Ex. 4, Harris Dep. at 79:2-82:18; 107:3-17; Ex. 6, Van Gerpen Dep. at 82:19-84:18; Ex. 15, Rockstraw Dep. at 87:2-88:10; Ex. 12, Babcock Dep. at 34:10-35:24, 190:5-191:8; Ex. 27, Deposition of Robert Riley ("Riley Dep.") at 123:15-125:10; Ex. 1, Eckhoff Van Gerpen Rep. ¶ 15; *see also* Ex. 26, Hammond Dep. at 128:19-131:1, 247:1-12).

21. A person of ordinary skill in the art at issue (hereafter, "POSA") is an individual possessing at least an undergraduate degree in chemical engineering or similar educational background and with a few years of experience in separation techniques, including in ethanol plants. (Ex. 1, Eckhoff Van Gerpen Rep. ¶¶ 35-36). Alternatively, a person of ordinary skill in the art would be an individual possessing less formal education, but several years of experience with separation techniques associated with ethanol plants, designing systems for separation of materials found in ethanol plants, or a similar work history. *Id.*

22. A POSA knows that while "oil" is a type of "fat," there are many fats that are not oil and have physical properties very different from those of oil. (Ex. 8, Eckhoff Dep. at 119:20-5). A POSA may use the terms "syrup" and "concentrated thin stillage" to refer to the post-evaporation stillage which still contains the majority of solid and/or suspended particles originally present in the thin stillage despite the partial removal of liquid. (Ex. 8, Eckhoff Dep.

at 118:15-19; Ex. 3, Reilly Dep. at 57:16-58:6,99:3-101:12; Ex. 27, Riley Dep. at 145:12-16; Ex. 28, Deposition Exhibit No. (“DX”) 1206; Ex. 6, Van Gerpen Dep. at 90:1-8; Ex. 4, Harris Dep. at 88:12-19).

C. The Court’s Construction of Key Claim Terms

23. In its Claim Construction ruling, this Court found that Claims 1, 10, and 16 of the ‘858 patent require a separate heating step that takes place after evaporation but before mechanical processing. (MDN 784, Supplemental Order on Claim Construction (“Supp Order on Claim Constr.”) 12-13 and 24) A POSA would therefore understand that a separate heating step is used to heat the stillage. (Ex. 19, ‘858 Patent at 2:23-30; Ex. 3, Reilly Dep. at 150:6-15; *see also* Ex. 8, Eckhoff Dep. at 393:15-22; Ex. 29, Expert Report of Dr. Steven Eckhoff in Rebuttal to the Expert Report of Mark Yancey (“Eckhoff Yancey Rep.”) at ¶¶ 164-165; Ex. 30, Deposition of Vincent Copa (“Copa Dep.”) at 35:2-37:22; Ex. 33, Deposition Transcript of David Winsness, Vol. IV (“Winsness Vol. IV, Dep.”) at 686:14-687:4; Ex. 18, Winsness Decl. at ¶ 27).

24. Claims 8-16 of the ‘484 Patent require that the mechanical processing of the thin stillage results in a concentrate that is “substantially oil free.” In its Claim Construction ruling, the Court determined that “substantially” should mean “largely or mostly.” (Supp Order on Claim Constr. at 16, 20, 22, 23 and 24).

25. [REDACTED]

[REDACTED]

[REDACTED] (Supp Order on Claim Constr. at 2-3 and 21; Ex. 38, Expert Report of David Rockstraw, Ph. D., P.E. dated March 22, 2013 (“Rockstraw Rep.”) at ¶ 99; Ex. 14, Rockstraw Rebuttal Rep. at ¶ 4.) Plaintiffs’ experts support this construction. (Ex. 13, McKenna

Dep.³ at 122:2-123:8, 124:12-126:14, 130:14-131:3, 146:2-147:1; 358:13-24; Ex. 8, Eckhoff Dep. at 540:4-8, 543:7-544:11).

III. BACKGROUND ON CORN OIL EXTRACTION

26. Prior to the inventions in the patents-in-suit, a person of ordinary skill looking to extract corn oil in an ethanol plant faced a confusing array of choices. (Ex. 24, Monceaux Dep. at 78:3-10, 81:11-86:6; Ex. 5, Yancey Dep. at 108:14-109:2; Ex. 6, Van Gerpen Dep. at 60:16-61:4; Ex. 4, Harris Dep. at 34:6-35:2, 56:15-59:16, 101:4-24; Ex. 15, Rockstraw Dep. at 83:14-85:5; Ex. 3, Reilly Dep. at 16:10-21:8, 32:13-34:25; 81:12-82:17; 104:8-9; Ex. 26, Hammond Dep. at 128:19-131:1, 247:1-12, 284:10-22; Ex. 13, McKenna Dep. at 233:15-22; *see also* Ex. 19, '858 Patent at 1:52-2:15(incorporating U.S. Pat. No. 5,250,182 by reference)). That was in part because extraction of corn oil can take place at any stage in the processing of corn, and can be based on a slew of different techniques. (*see e.g.* Ex. 165, Prevost Fig. 1 and Claims 16A, 17A, 20A and 24A; Ex. 1, Eckhoff Van Gerpen Rep. ¶¶ 99-122; *see also* Ex. 6, Van Gerpen Dep. at 27:18-30:18, 41:4-43:13, 45:2-11; Ex. 24, Monceaux Dep. at 51:9-18, 81:11-86:6, 96:12-100:15; Ex. 4, Harris Dep. at 96:13-97:2; Ex. 15, Rockstraw Dep. at 69:16-75:3, 83:14-85:5; Ex. 5, Yancey Dep. at 108:14-109:2; Ex. 39, Deposition Transcript of Jay Sommers ("Sommers Dep.") at 297:16-298:20; Ex. 40, Deposition Transcript of Michael Vick ("Vick Dep.") at 145:8-148:3; Ex. 3, Reilly Dep. at 58:22-66:7) .

³ McKenna testified repeatedly that his understanding of "substantially" was based on a "common sense" interpretation of the Court's construction, and was not arbitrary. (Ex. 13, McKenna Dep. at 122:2-123:8, 124:12-126:14, 130:14-131:3, 146:14-147:1; *see also* Ex. 8, Eckhoff Dep. at 540:4-8, 543:7-544:11).

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A. Front-End Extraction in Wet Mill Ethanol Plants

27. It is possible to recover corn oil from the corn kernel before it is milled and fermented to produce ethanol. (Ex. 1, Eckhoff Van Gerpen Rep. ¶ 9; Ex. 8, Eckhoff Dep. at 497:6-8); *see also* (Ex. 41, United States Patent No. 2,615,029 (“Rosten”) at 1:37-43; Ex. 3, Reilly Dep. at 62:8-24).

28. This process typically does not take place in the dry mill ethanol plants that are the subject of the patents-in-suit, but is instead relied upon in wet mill plants. (Ex. 42, Deposition of Daniel Ellis (“Ellis Dep.”) at 10:19-11:7; Ex. 6, Van Gerpen Dep. at 29:21-30:18; Ex. 8, Eckhoff Dep. at 14:3-9, 19:1-22).

29. This process is extremely expensive. (Ex. 1, Eckhoff Van Gerpen Rep. ¶ 9; Ex. 8, Eckhoff Dep. at 497:6-8); *see also* (Ex. 41, Rosten at 1:37-43; Ex. 3, Reilly Dep. at 62:8-9). It is typically used to extract food-grade corn oil that can be used for human consumption. (*Id.*)

B. Extraction in Dry Mill Ethanol Plants

30. Next, it is possible to recover corn oil during the process in which it is milled and fermented to create ethanol. This process is referred to as “dry milling.”

31. Prior to the inventions in the patents-in-suit, dry mill ethanol production facilities did not extract corn oil during the ethanol production process. (Ex. 6, Van Gerpen Dep. at 30:6-12).

32. There are at least 16 alternative locations or “streams” in the dry-mill ethanol production process from which oil could theoretically be recovered. (Supp Order on Claim Constr.; Ex. 165, Prevost Fig. 1 and claims 16A, 17A, 20A and 24A; Ex. 1, Eckhoff Van Gerpen Rep. ¶¶ 87-122; *see also* Ex. 6, Van Gerpen Dep. at 27:18-30:18; 41:4-43:13; 45:2-19; Ex. 4, Harris Dep. at 96:13-2; Ex. 15, Rockstraw Dep. at 69:16-23; 72-74; Ex. 5, Yancey Dep. at 108:14-109:2; Ex. 39, Sommers Dep. at 297:16-298:20; Ex. 40, Vick Dep. at 145:8-146:17; Ex.

8, Eckhoff Dep. at 203:8-205:1; Ex. 3, Reilly Dep. at 56:19-58:65; Ex. 24, Monceaux Dep. at 51:9-18; 96:12-100:15).

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

33. There are many different types of separation technologies that can be used to separate the components of an oil and water emulsion, and the most appropriate technology for any given task will vary depending on the targeted byproduct stream. (Ex. 24, Monceaux Dep. at 78:3-10; 81:11-86:6; Ex. 5, Yancey Dep. at 108:14-109:2; Ex. 6, Van Gerpen Dep. at 60:16-61:4; 113:24-114:4; Ex. 4, Harris Dep. at 34:6-35:2; 56:15-59:16; 101:4-25; Ex. 15, Rockstraw Dep. at 83:14-85:5; Ex. 3, Reilly Dep. at 16:10-21:8; 26:9-18; 32:13-34:25; 81:12-82:7; 104:8-9; Ex. 26, Hammond Dep. at 247:1-12, 284:10-22; Ex. 13, McKenna Dep. at 233:15-22; *see also* Ex. 19, '858 Patent at 1:52-2:15 (incorporating U.S. Pat. No. 5,250,182 by reference)).

34. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

35. Indeed, the unpredictability of separation techniques is such that any new technique – or combination of techniques – would necessarily have to be subjected to one or

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more testing steps. (*See* Ex. 42, Ellis Dep. at 12:22-13:19; Ex. 6, Van Gerpen Dep. at 132:24-133:3; Ex. 8, Eckhoff Dep. at 81:2-7; 104:20-22; 146:15-21; 404:2-4). A person of ordinary skill testing those techniques would not only seek to vary the separation mechanisms to improve yields, but would also seek to change other variables – e.g. by heating the product, or cooling it, or passing it through a filter. (Ex. 24, Monceaux Dep. at 84:5-86:6; Ex. 30, Copa Dep. at 35:2-37:22, 167:6-168:21; Ex. 5, Yancey Dep. at 108:14-109:2; *see also* Ex. 19, ‘858 patent 1:52-2:15).

C. Extraction of Corn Oil from Thin Stillage

36. Even if a POSA decided to extract oil from the thin stillage stream, that person faced a difficult challenge and no clear path. Extraction of corn oil from thin stillage is a complex process for a person of ordinary skill in the art because a variety of different factors affect the extraction yields – and indirectly, the profitability – of the process. (Ex. 24, Monceaux Dep. at 78:2-86:6, 98:16-99:4; Ex. 5, Yancey Dep. at 108:14-109:2; Ex. 6, Van Gerpen Dep. at 60:21-61:19, 113:24-114:4; Ex. 4, Harris Dep. at 34:6-35:2, 101:4-25; Ex. 3, Reilly Dep. at 32:13-34:25, 81:12-82:7, 104:8-9; Ex. 26, Hammond Dep. at 247:1-12, 284:10-22; Ex. 15, Rockstraw Dep. at 69:9-70:10; Ex. 40, Vick Dep. at 145:7-146:17; Ex. 13, McKenna Dep. at 233:15-22; *see also* Ex. 19, ‘858 patent 1:52-2:15).

1. A POSA Would Not Be Able To Predict Whether Mechanical Force Could Break a Thin Stillage Emulsion

37. Thin stillage is a complex emulsion of oil, water and other components including, among other things, soluble starch, insoluble starch, soluble protein, insoluble protein, peptides, amino acids, minerals, solids, and soluble fiber. (Ex. 1, Eckhoff Van Gerpen Rep. ¶¶ 52-62; Ex. 4, Harris Dep. at 64:19-65:12; Ex. 6, Van Gerpen Dep. at 34:2-36:25; Ex. 3, Reilly Dep. at 34:18-35:25; 58-59, 65:4-66:7; Ex. 5, Yancey Dep. at 69:10-24, 76:20-77:7).

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Dep. at 89:11-25; Ex. 5, Yancey Dep. at 113:21-114:22; Ex. 1, Eckhoff Van Gerpen Rep. ¶ 56; Ex. 24, Monceaux Dep. at 86:7-11; Ex. 15, Rockstraw Dep. at 102:4-105:12).

2. A POSA Would Believe that Concentrating Thin Stillage Would Make Oil Extraction More Difficult

43. Prior to the inventions of the patents-in-suit, syrup's high viscosity, high solids content, and high emulsion content would suggest to a POSA that separating corn oil from syrup would be harder than separating it from thin stillage. (Ex. 1, Eckhoff Van Gerpen Rep. ¶¶ 39-56; Ex. 6, Van Gerpen Dep. at 106:20-107:4; Ex. 3, Reilly Dep. at 88:9-92:21; 112:20-113:5; 173:16-174:3; 175:1-6; Ex. 165, Prevost ¶ 11; Ex. 4, Harris Dep. at 35:20-24; 37:13-17; 95:1-11; Ex. 42, _ Ellis Dep. at 41:8-10; Ex. 5, Yancey Dep. at 76:20-77:7; 134:5-19; Ex. 24, Monceaux Dep. at 88:18-22; Ex. 15, Rockstraw Dep. at 102:4-105:12).

44. For example, one of the inventors of the Prevost reference, Neal Hammond, believed that "thin stillage would lend itself more toward centrifugation than" a post-evaporation syrup. (Ex. 26, Hammond Dep. at 278:1-5). [REDACTED]

[REDACTED] (Ex. 39, Deposition of Agri-Energy/Jay Sommers ("Sommers Dep.") at 297:16-298:20). And Dr. Eckhoff testified that, at the time of the invention, he would have been skeptical that recovery of oil from post-fermentation streams was possible. (Ex. 8, Eckhoff Dep. at 61:11-20; Ex. 13, McKenna Dep. at 360:15-361:5).

45. Evaporating thin stillage, and heating the starch it contains, causes thickening of the resulting syrup due to the complex combination of thin stillage. (Ex. 1, Eckhoff Van Gerpen Rep. ¶¶ 52-62; Ex. 3, Reilly Dep. at 56:19-58:65; 69:23-71:7; 73:7-12; 109:7-111:18; Ex. 165,

Prevost ¶¶ 11; Ex. 4, Harris Dep. at 64:19-65:12; 70:8-14; 124:19-23; Ex. 6, Van Gerpen Dep. at 34:2-36:25; Ex. 15, Rockstraw Dep. at 101:1-14; Ex. 5, Yancey Dep. at 69:10-24; 76:20-77:7).

46. A POSA would believe that the thickening of the syrup would render oil extraction more difficult pursuant to Stokes' Law. (Ex. 1, Eckhoff Van Gerpen Rep. ¶¶ 39-51; Ex. 44, Westfalia's Whey Processing Lines brochure ("Whey Processing Brochure") (curve IV) (See Fig. 33); Ex. 3, Reilly Dep. at 88:9-92:21, 98:3-101:12; Ex. 6, Van Gerpen Dep. at 85:23-86:5, 106:20-107:4, 124:10-20; Ex. 4, Harris Dep. at 11:6-12:23, 36:17-22, 38:14-25, 90:2-6; Ex. 40, Vick Dep. at 169:17-171:11; Ex. 24, Monceaux Dep. at 86:7-88:22; Ex. 15, Rockstraw Dep. at 91:11-20). Stokes' Law, a concept familiar to a person of ordinary skill in the art of centrifuge technology, predicts the rate at which solid particles settle in a liquid solution. (Ex. 1, Eckhoff Van Gerpen Rep. ¶¶ 39-51).

47. According to Stokes' Law, the rate of settling is inversely related to the viscosity of the liquid solution, suggesting that the increased viscosity of syrup would *dramatically decrease* separation efficiency. (Ex. 1, Eckhoff Van Gerpen Rep. ¶¶ 39-51; Ex. 44, Whey Processing Brochure; Ex. 3, Reilly Dep. at 88:9-92:21, 98:3-101:12; Ex. 6, Van Gerpen Dep. at 85:23-86:5, 106:20-107:4, 124:10-20; Ex. 4, Harris Dep. at 11:6-12:23, 36:17-22, 38:14-25, 90:2-6; Ex. 40, Vick Dep. at 169:17-171:11; Ex. 24, Monceaux Dep. at 86:7-88:22; Ex. 15, Rockstraw Dep. at 91:11-20; 101:6-10).

48. The application of Stokes' Law to corn stillage streams is unpredictable, because many of those streams are "non-Newtonian fluids" – i.e. fluids whose viscosity varies. (Ex. 24, Monceaux Dep. at 90:18-92:20, 162:4-163:5). Thus, testing the stillage of an ethanol plant in a lab may produce different results than the same test performed on flowing stillage in an ethanol plant. *Id.*

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49. A POSA would also believe that evaporating thin stillage would make corn oil extraction more difficult because evaporation leads to a greater concentration of solids in the stillage. (Ex. 4, Harris Dep. at 88:12-19; Ex. 42, Ellis Dep. at 41:8-10; Ex. 3, Reilly Dep. at 57:16-58:6, 99:3-101:12; Ex. 27, Riley Dep. at 145:12-16; Ex. 28, DX 1206; Ex. 8, Eckhoff Dep. at 118:15-19; Ex. 6, Van Gerpen Dep. at 90:1-8; Ex. 5, Yancey Dep. at 117:7-9; Ex. 15, Rockstraw Dep. at 101:1-9).

50. Increased solids in syrup increase the difficulty and unpredictability of separating the oil because the solids are bound to the oil with a force that can be stronger than the centrifugal force of the centrifuge. (Ex. 42, Ellis Dep. at 41:8-10; Ex. 1, Eckhoff Van Gerpen Rep., ¶¶ 56, 62; Ex. 3, Reilly Dep. at 99:3-101:12; Ex. 27, Riley Dep. at 145:12-16; Ex. 28, DX 1206; Ex. 5, Yancey Dep. at 68:16-69:9; Ex. 15, Rockstraw Dep. at 84:1-14).

51. Accordingly, prior to the inventions of the patents-in-suit, a POSA would not have attempted to evaporate the thin stillage to form syrup before extracting corn oil. (SOF ¶¶ 44-51, *supra*.)

IV. THE PRIOR ART

52. The prior art does not teach or suggest combining the references to arrive at the claimed invention. (Ex. 19, ‘858 pp. 1-2 References Cited; Ex. 20, ‘516 at pp. 1-4 References Cited; Ex. 21, ‘517 pp. 1-4 References Cited; Ex. 22, ‘484 at pp. 1-5 References cited; Ex. 165, Prevost ¶14; Ex. 3, Reilly Dep. at 164:10-25 (discussing Rosten), 168:18-169:5 (discussing Lachle), 173:6-14 (discussing GB ‘672); Supp Order on Claim Constr. at p. 13; Ex. 45, Great Britain Patent No. 1200672 (“GB ‘672”) at p. 2, ll. 87-89; Ex. 1, Eckhoff Van Gerpen Rep. ¶ 135; Ex. 5, Yancey Dep. at 181:11-183:2; 184:16-185:2).

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A. U.S. Patent 2,615,029 (“Rosten”)

53. U.S. Patent 2,615,029, issued to Rosten in 1952, disclosed a two-step method for separating oil from a moisture-rich by-product of ethanol production called “distillers’ thin slop.” (Ex. 41, Rosten (1:44-55; 2:1-33; 37-48; Fig. 1; 2:50 – 3:3; 3:1-3 and 37-39); Ex. 1, Eckhoff Van Gerpen Rep. ¶¶ 124-131; Ex. 8, Eckhoff Dep. at 686:15-17, 687:2-7, 730:22-733:11; Ex. 3, Reilly Dep. at 164:10-25, 168:18-169:5) .

54. Distillers’ thin slop is not thin stillage. (Ex. 1, Eckhoff Van Gerpen Rep. ¶¶ 41, 127, 129-130 ; Ex. 19, ‘858 Patent 2:59, 4:28-34; Ex. 41, Rosten at 1:44-50; 2:13-33, 43-48 & Fig 1, 3:1-3; Ex. 8, Eckhoff Dep. at 730:22-731:2; *see also* Ex. 8, Eckhoff Dep. at 118:15-19; Ex. 3, Reilly Dep. at 57:16-58:6, 99:3-101:12; Ex. 27, Riley Dep. at 145:12-16; Ex. 28, DX 1206; Ex. 6, Van Gerpen Dep. at 90:1-8; Ex. 4, Harris Dep. at 88:12-19).

55. Rosten’s thin slop is not evaporated or concentrated before it is fed to the first centrifuge to produce an oil/water emulsion. (Ex. 41, Rosten at 1: 44-50).

56. Rosten’s method required two centrifugation steps: a first centrifuge to remove both heavy and suspended solids, and a second centrifuge to separate oil from the resulting oil-water emulsion. (Ex. 41, Rosten (1:44-55; 2:1-33 and 37-48; Fig. 1; 2:50 – 3:3; 3:1-3 and 37-39); Ex. 1, Eckhoff Van Gerpen Rep. ¶¶ 126-131; Ex. 8, Eckhoff Dep. at 686:15-17, 687:2-7, 730:22-733:11; Ex. 3, Reilly 164:10-25, 168:18-169:5; *see also* Ex. 19, ‘858 Patent at 1:52-2:15; Ex. 1, Eckhoff Van Gerpen Rep., ¶ 124).

57. Rosten perpetuates what was then the conventional thinking: that corn oil extraction should be performed by first removing solids with a first centrifuge before attempting to recover oil. (*Id.*; *see also* SOF ¶¶ 79-83 (discussing Lachle)).

58. Rosten does not disclose the moisture content, temperature, and pH ranges claimed in the patents-in-suit, and those properties are not inherent in Rosten. (*See generally* Ex. 41, Rosten; SOF ¶¶ 14-19)

B. U.S. Patent Application 2004/0087808 (“Prevost”)

59. U.S. Patent Application 2004/0087808 (“Prevost”), filed by John Prevost and Neal Hammond in July of 2003, discloses the use of centrifuges at various points in an ethanol plant’s production stream. (Ex. 165, U.S. Patent Application 2004/0087808 (“Prevost”) at Fig. 1 and claims 16A, 17A, 20A and 24A). In response to the January 26, 2006 Office Action from the USPTO requiring an election of claims, Prevost elected claims 1-7 and withdrew the remaining claims 8-28 from consideration. (Ex. 46, Prevost File History at (1/26/2006 Requirement for Restriction/Election; 3/6/2006 Response to Restriction/Election; 5/4/2006 Non-Final Rejection))

60. Prevost reflects the contemporary understanding in the industry that oil was present in the dry mill process, but teaches away from using a centrifuge to recover oil from concentrated thin stillage. (Ex. 165, Prevost at ¶ 14; Supp Order on Claim Constr. at p. 13 (“[Prevost] teaches away from centrifugation for stillage of any type with a moisture content above 15%.”); Ex. 1, Eckhoff Van Gerpen Rep. ¶¶ 87-122; Ex. 3, Reilly Dep. at 143:9-13; Ex. 26, Hammond Dep. at 276:3-278:5).

61. Prevost does not disclose heating syrup after it exits the evaporator. (Ex. 1, Eckhoff Van Gerpen Rep. at ¶ 104). Prevost also does not explicitly disclose the pH and temperature ranges of the syrup found in claim 8 of the ‘858 Patent, all claims of the ‘516 Patent, claims 5 and 6 of the ‘517 Patent, and claim 30 of the ‘484 patent, and those ranges are not inherent in Prevost. (*Id.*)

62. Claim 19 of Prevost requires that the moisture content of the thin stillage be less than 15%. (Ex. 165, Prevost at Claim 19.)

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63. Other parts of Prevost refer to extracting oil from a product that contains 15% water. (Ex. 165, Prevost at ¶¶ 12, 15-16, 31, 33-35, and 38). A POSA would understand from these repeated references that Prevost disclosed extracting oil from a product with 15% water and perhaps thought this the optimal condition for oil extraction. (Ex. 1, Eckhoff Van Gerpen Rep. at ¶¶ 112, 115).

64. Another of the claims in the Prevost application includes a reference to a stream in which its “water content is less than about 15%.” (Ex. 165, Prevost at Claim 8).⁴

65. Years after filing the ‘808 application, Prevost filed another, also containing a claim element of “a syrup having a water content of 15% wt. % or less.” (Ex. 2, ‘547 Application at Claim 1).

66. Prevost’s specification also describes passing DDGS, which contain approximately 10% water by weight (Ex. 15, Rockstraw Dep. 128:18-129:5), through a centrifuge. (Ex. 165, Prevost at ¶13).

[REDACTED]

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[REDACTED]

[REDACTED]

[REDACTED]

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⁴ See also (Ex. 165, Prevost at p. 4 ¶¶ 13, 24, 30-31; p 5 claim 8, and p 6, claims 19, 20; Ex. 26, Hammond Dep. at 177:8-181:6, 200:24-1; Ex. 15, Rockstraw Dep. at 123:12-124:2; 128:14-131:13; Ex. 3 Reilly Dep. at 138:3-15; Ex. 4, Harris Dep. at 106:6-107:2, 114:12-18; Ex. 6, Van Gerpen Dep. at 147:9-19; Ex. 5, Yancey Dep. at pp. 131:21-132:7). No claims in Prevost are directed to a stream containing less than 15 wt. % fat (or oil). (See generally, Ex. 165, Prevost at pp. 5-6, claims 1-28). Mr. Hammond has never corrected mistakes in a patent or application. (*Id.* at 31:11-32:21; 46:24-47:8; 306:20-307:21).

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[REDACTED]

[REDACTED]

[REDACTED]

67. CleanTech's expert had no basis to speculate on whether one could centrifuge concentrated thin stillage having less than 40% water to recover oil. (Ex. 8, Eckhoff Dep. at 239:20-22, 240:13-15) Mr. Winsness testified it would be possible to centrifuge concentrated thin stillage having less than 30% water to recover oil. (Ex. 37, Deposition Transcript of David Winsness, Vol. VIII ("Winsness Vol. VIII") at Dep. at 1139:23-1140:3) [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

68. Defendants paid \$2,000 to Prevost's co-inventor, Neal Hammond, to sign a declaration in which he opines that Claim 19 should have said "fat" and not "water." (Ex. 26, Hammond Dep. at 27:14-25; 30:6-11; 50:10-51:25; 306:6-19; and 310:5-311:6). Hammond acknowledged that Prevost was the inventor of the claims involving less than 20% water and was the primary contact with the patent attorney. (Ex. 26, Hammond Dep. at 31:14-16; 306:17-19). Hammond had not spoken to Prevost about the meaning of these claims. (*Id.* at 27:23-25, 30:6-8)

C. The GB'672 Reference

69. GB Patent 1,200,672 teaches the extraction of oil from animal systems. (Ex. 45, GB '672 at 2:87-89; Ex. 1, Eckhoff Van Gerpen Rep. ¶¶ 132-140; Ex. 3, Reilly Dep. at 173:6-14).

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70. GB '672 teaches away from the patents-in-suit. It specifically warns that when the fat content of the animal product is too low, removal of water by evaporation will lead to a concentrate that is too viscous to centrifuge effectively. (Ex. 45, GB '672 at 2:78-94).

D. The Animal Processing References

71. Defendants cite several references that relate to processing of animal byproducts. (Ex. 45, GB '672; Ex. 47, United States Patent 4,137,335; Ex. 48, "The Latest on Industrial Fish Processing," published in Westfalia Magazin No.3 in 1979 ("Westfalia Magazin No.3"); Ex. 49, "Decaners and Separators for Industrial Fish Processing," published by Westfalia Separator Industry GmbH in 1999; Ex. 50, "The production of fish meal and oil," published by the Food and Agriculture Organization of the United Nations in 1986.)

72. There are substantial differences between animal cells and plant cells that cause extraction of oil from animal products to differ significantly from extraction of oil from plants like corn. (Ex. 51, United States Patent No. 2,325,327 to Lachle ("Lachle") at p. 2, left col., line 70- right col., line 4; Ex. 1, Eckhoff Van Gerpen Rep. ¶¶ 52-62 and 132-151; Ex. 5, Yancey Dep. at 181:11-183:2; 184:16-185:2).

73. Plant cells have a cell wall, and animal cells do not. This means that the animal cells are far easier to breach than plant cells. (Ex. 1, Eckhoff Van Gerpen Rep. ¶¶ 52-62 and 132-151). A POSA would therefore understand that the Animal Processing References teach that animal byproducts are typically free of solids and emulsions prior to centrifugation, and therefore require simpler processes to recover oil. *See e.g.* (Ex. 52, The UN Paper (1986), Westfalia Industrial Processing (1999), Ex. 48, Westfalia Magazin No.3; Ex. 1, Eckhoff Van Gerpen Rep. ¶¶ 57-62, 141-151, 168-174; Ex. 8, Eckhoff Dep. at 267:6-12).

74. Corn also contains a large percentage of starch, whereas animal material does not. As a result, thin stillage contains residual starch that did not ferment into ethanol. A POSA

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would have understood that this residual starch, when passed through an evaporator in an ethanol plant, could turn to gelatin and cause excessive thickening and emulsification. (Ex. 1, Eckhoff Van Gerpen Rep., ¶¶ 36-62) Extraction of oil from animal cells did not have to account for these concerns. (*Id.*; Ex. 51, Lachle p. 2, left col., line 70- right col., line 4; Ex. 1, Eckhoff Van Gerpen Rep. ¶¶ 52-62 and 132-151; Ex. 5, Yancey Dep. at 181:11-183:2; 184:16-185:2; Ex. 4, Harris Dep. at 64:19-65:12; Ex. 53, Deposition of Randal Doyal 6/5/13 (“Doyal Dep. 2013”) at 48:9-22).

75. Finally, corn material contains natural emulsifying agents, such as protein and starch. (*Id.*). Concentrated thin stillage is thus a very stable emulsion, making extraction of oil from corn much more difficult than extracting oil from animal material. (*Id.*).

76. A POSA would therefore understand that the plant and animal systems are so dissimilar that knowledge of one system would have little relevance to the other. As Dr. Eckhoff explained, “just because it worked on fish meal, or some other type of product, doesn’t mean that it’s going to work for . . . concentrated thin stillage.” (Ex. 8, Eckhoff Dep. at 349:19-22).

E. U.S. Patent No. 2,325,327 (“Lachle”)

77. U.S. Patent No. 2,325,327 issued to Lachle in 1943 (“Lachle”) discloses methods of extracting oil from animal or plant matter using centrifuges. (Ex. 51, (“Lachle”) p. 1 Fig. 1, p. 3, left col., ll.40-50).

78. Lachle teaches that the material from which oil is to be recovered must have sufficient moisture content for centrifugation to be effective. (Ex. 51, Lachle p. 1, left col., ll. 7-10; p. 2, Left col., ll. 29-33, 38-43, 52-64; p. 2- left col., line 70-right col., line 4; p. 4, left col., ll. 38-47) (Ex. 1, Eckhoff Van Gerpen Rep. ¶¶ 141-151; Ex. 4, Ex. 5, Yancey Dep. at 181:11-

183:2). And it teaches that for low-moisture materials, such as corn, water must be added to allow for oil removal. (*Id.*).

79. A POSA would understand that Lachle teaches away from the inventions in the patents-in-suit, insofar as those patents disclose the removal of moisture prior to oil recovery. (Ex. 1, Eckhoff Van Gerpen Rep. ¶ 142).

80. Lachle also teaches that, unlike the removal of oil from animal materials, the removal of oil from corn requires additional steps and multiple centrifuges to separate out the starch which would otherwise act as an emulsifying agent. (Ex. 51, Lachle p. 2, left col., line 70-right col., line 4; Ex. 8, Eckhoff Van Gerpen Rep. ¶¶ 52-62 and 132-151; Ex. 5, Yancey Dep. at 181:11-183:2; 184:16-185:2; e.g., Ex. 45, GB '672 p. 2, ll. 78-94 (directed to the recovery of fat from animal material such as slaughterhouse offal); Ex. 3, Reilly Dep. at 173:6-14 and 175:1-6 (discussing GB '672)).

81. Lachle also teaches using acids to reduce the starch in fermented corn. Lachle teaches this to ensure that the starch cannot act as an emulsifying agent. (Ex. 51, Lachle p. 2, left col., line 70 – right col., 4). A POSA would therefore understand Lachle to teach avoiding the formation of oil-water emulsions in corn material prior to oil extraction. (Ex. 1, Eckhoff Van Gerpen Rep. ¶143).

F. VDT Poultry System

82. The VDT Poultry System was a poultry processing system devised in 2002 by a company founded by Cantrell. (Ex. 54, DX 123 at VDT-000214). This system targeted undesirable waste byproduct streams of meat processing plants including: chicken backs, chicken skin, chicken livers, mechanically deboned meat, meat and bone meal, offal and DAF sludge, arguably, the most undesirable byproduct of meat processing plants. (Ex. 18, Winsness

Decl. at ¶ 13). DAF sludge is “a gooey layer of food paste that is anywhere from 70 to 90% water.” (Ex. 10, DX 317 at 14; Ex. 9, Dyer Dep. at 89:2-10; Ex. 54, DX 123 at VDT-000217, 220 and 227; Ex. 7, Barlage Dep. at 89:2-11; 97:11-100:23). It is not a method for extracting corn oil. (*Id.*; Ex. 18, Winsness Decl. at ¶ 12.)

83. The VDT Poultry System involved the processing of DAF sludge by heating it to 200 degrees Fahrenheit using steam injection, which added moisture and allowed the fat to separate from the product in the “Wet Processing System.” (Ex. 54, DX 123 at VDT-000220; Ex. 1, Eckhoff Van Gerpen Rep. ¶¶ 177-178; Ex. 32, Deposition of David Winsness, Vol. III (“Winsness Vol. III Dep.”) at 430:7-433:12 and Ex. 36, Deposition Transcript of David Winsness, Vol. VII (“Winsness Vol. VII Dep.”) at 1023:20-1034:19; Ex. 10, DX 317; Ex. 24, Monceaux Dep. at 176:1-18; Ex. 15, Rockstraw Dep. at 160:10-161:9; Ex. 8, Eckhoff Dep. at 284:21-285:7).

84. The water and product mixture then proceeded to a decanter, where the liquid was separated from the solids. (Ex. 54, DX 123 at VDT-000220). The liquid portion was then passed through a separator which helped dissociate the fat from the water. (Ex. 54, DX 123 at VDT-000220). Users could also optionally purchase the VDT Protein Reclamation Project, which involved downstream evaporation of the water generated by the above process to concentrate soluble proteins. (Ex. 54, DX 123 at VDT-000220-221).

85. On July 28 and 29, 2003 VDT held a System Sales Training Session exclusively focused on VDT’s Sales of equipment modules to the meat processing industry. (Ex. 10, DX 317 at 7; Ex. 9, Dyer Dep. at 76:18-93:5). This training specifically taught the sequence and flow of VDT’s poultry and meat processing systems, and concentrated on the DAF waste product and

the system costs and benefits as applied to this specific industry. (*Id.*) Sales or processes targeted to the ethanol industry were not discussed in this presentation. (Ex. 10, DX 317).

V. THE DISCOVERY OF NEW CORN OIL EXTRACTION TECHNIQUES

A. The Inventors' Background

1. David Cantrell – An Agro-Industrial Innovator

87. Inventor David Cantrell is an entrepreneur who has made a career out of finding innovative ways to process and commercialize agro-industrial waste products. (Ex. 55, Deposition of David F. Cantrell, Vol. I (“Cantrell Vol. I Dep.”) at 61:18-74:3).

88. Mr. Cantrell’s innovations have led to the successful marketing of waste liquid from brewing beer, and of waste by-product of cat litter manufacturing. His innovations allow companies to develop new revenue streams and improve profitability. (*Id.* at 10:10-11:20; 68:12-69:3).

89. Mr. Cantrell holds Undergraduate and Master’s degrees in poultry science, and much of his career has been spent developing and marketing products in the animal feed industry. (Ex. 55, Cantrell Vol. I Dep. at 46:25-47:16; 50:12-57:10; 61:14-68:6.)

90. Mr. Cantrell founded Vortex Dehydration Technology (VDT) in the early 2000’s. (Ex. 55, Cantrell Vol. I Dep. at 74:6-74:11, Ex. 58, Declaration of David F. Cantrell (“Cantrell Decl.”) at ¶ 3). VDT’s activities focused primarily on a grinding/drying technology called the Windhexe. (Ex. 55, Cantrell Vol. I Dep. at 74:6- 80:17). One of VDT’s main goals was to identify the various industries and markets in which the Windhexe could be used to dry industrial substances. (*Id.* at 79:20-81-81; Ex. 9, Dyer Dep. at 20:5-21:23).

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2. David Winsness – A Technology Expert

91. Mr. Cantrell first met David Winsness during an experiment aimed at testing the capabilities of the Windhexe technology. (Ex. 55, Cantrell Vol. I Dep. at 85:4-85:5). At the time, Mr. Winsness worked for a company that supplied the large air compressors needed for VDT's testing – Tencarva Machinery company ("Tencarva"). (Ex. 31, Deposition Transcript of David Winsness, Vol. I ("Winsness Vol. I Dep.") at 116:25-117:1).

92. Mr. Winsness holds a Bachelor's degree in mechanical engineering from Clemson University. (Ex. 18, Winsness Decl. ¶2 (*Id.* at 111:14-18)). Upon graduation, Mr. Winsness joined Tencarva, where he worked for over a decade. (*Id.* at 116:14-16, 117:25-118:13). His responsibilities at Tencarva included designing certain air compressor systems and operating centrifuges to test industrial samples. (Ex. 18, Winsness Decl. ¶2 (*Id.* at 114:18-118:13)).

93. Mr. Winsness became Chief Technology Officer of VDT in 2002, while still working at Tencarva. (Ex. 18, Winsness Decl. ¶3 (*Id.* at 12:14-15:2, 116:13-118:13, 127:12-15)). He was promoted to Chief Executive Officer of VDT in 2002, before leaving VDT in 2005 to become Chief Technology Officer of GreenShift. (*Id.* at 12:14-15:2, 121:10- 122:3).

B. VDT's Use of Centrifuges in the Meat Processing Industry

1. The Collaboration with Alfa-Laval

94. In 2002, VDT was approached by Greg Barlage – then an employee of Alfa Laval. (Ex. 7, Barlage Dep. at 20:13-21:12, 22:1-7, 23:16-24:12, 40:11-42:4, 42:20-43:9). Mr. Barlage proposed to incorporate Alfa Laval's centrifuge products into VDT's drying systems. (*Id.*; Ex. 59, GreenShift Form 10-K 2012 at 67).

95. By that time, VDT knew that removing oil from the substances to be processed by the Windhexe helped improve the system's performance. (Ex. 60, Deposition of Rodney Lee

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(“Lee Dep.”) at 50:4-14). Accordingly, VDT began working with Alfa Laval to test systems in which industrial matters could be centrifuged prior to Windhexe processing. (*Id.* at 50:23-51:8).

96. In order to preserve the confidentiality of this testing, Alfa Laval and VDT signed a “Non-Disclosure Agreement” in October 2002. (Ex. 61, DX 118, at GCS000337-340). This agreement specified that “[t]he confidentiality obligations will continue throughout the Term hereof and thereafter for five years from the later of the date of termination or the date of disclosure of the Confidential Information.” (*Id.* at GCS000337, GCS000340).

97. At the end of 2005, Mr. Barlage left Alfa Laval to join GreenShift. (Ex. 7, Barlage Dep. at 35:14-36:10). Mr. Barlage is now GreenShift’s Chief Operating Officer. (*Id.* at 14:15-16).

2. The Case Farms Poultry System

98. By 2002, VDT had designed a Poultry Byproduct Processing System incorporating the Windhexe. (Ex. 54, DX 123 at VDT-000214).

99. In November of 2002, VDT entered into an agreement to lease its first system to Case Farms of North Carolina (“Case Farms”). (Ex. 54, DX 123 at VDT-000214).

100. The poultry system was designed in self-contained modules for easy installation. Ex. 54, DX 123 at VDT-000214. These modules included: (1) the “Wet Processing System,” (2) the “Protein Reclamation” system, and (3) the “Windhexe Air Dry System.” (Ex. 54, DX 123 at VDT-000220).

101. VDT installed all three systems at Case Farms. (Ex. 36, Winsness Vol. VII Dep. at 1013:24-1014:11).

C. The Inventors’ Identification of a Need for a Corn Oil Extraction System

102. In 2000, Agri-Energy approached Cantrell to test the Windhexe as a system to dry its concentrated thin stillage, or syrup. (Ex. 55, Cantrell Vol. I Dep. at 97:5-99:9). But upon

testing, the Windhexe failed to successfully dry the syrup because the syrup adhered to the inner walls of the device. (*Id.* at 99:4-99:18). Agri-Energy therefore abandoned the testing. (*Id.*).

103. This experiment sparked Mr. Cantrell's curiosity. (*Id.* at 89:12-92:7, 99:19-100:18). Mr. Cantrell understood that the Agri-Energy testing had failed in part because of the oil contained in the syrup. (*Id.* at 99:4-99:18; 251:11-254:17; 927:13-18; Ex. 62, DX 119 p 3; Ex. 58, Cantrell Decl. at ¶¶ 7-9). Because of his experience in the animal feed industry, Mr. Cantrell also knew that oil was an expensive and valuable component of animal feed. (Ex. 55, Cantrell Vol. I Dep. at 47:8-58:11, 66:10-68:6).

104. In early 2003, Mr. Cantrell and Mr. Winsness therefore began to assemble a team (the "Research Team") to research corn oil extraction processes, with the goal of eventually bringing such a process to market. (*Id.* at 100:8-101:14, 105:22-107:7, 119:20-120:20). The Research Team consisted primarily of Mr. Cantrell, Mr. Winsness, Agri-Energy, Alfa Laval (specifically Greg Barlage, who in 2003 was employed by Alfa Laval) and Mark Lauderbaugh of Trident. (Ex. 39, Sommers Dep. at 346:2-350:20; *see also*, Ex. 63, DX 101; Ex. 64, DX 381; Ex. 58, Cantrell Decl. at ¶¶ 11-12).

105. As highlighted in the "Background of the Invention" of the '858 patent, a person of ordinary skill in the art would have recognized that any hypothetical method must necessarily process ethanol waste products at, or close to, the rate these are produced in order to be "successful in terms of efficiency or economy" in practice. (Ex. 19, '858 Patent at 1:53, 1:63, 2:5, 2:8, 2:11-12 (emphasizing the need for efficiency and economy in oil recovery)).

106. Mr. Cantrell's research goal was to develop an oil recovery method that could be used on the voluminous quantities of waste product created daily in an operating ethanol production facility. (Ex. 1, Eckhoff Van Gerpen Rep. ¶ 65; Ex. 8, Eckhoff Dep. at 570:1-4;

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574:8-20; Ex. 64, DX 381; Ex. 24, Monceaux Dep. at 71:12-73:6, 90:18-92:20; Ex. 15, Rockstraw Dep. at 16:17-17:1; Ex. 6, Van Gerpen Dep. at 42:6-13, 90:12-22; Ex. 4, Harris Dep. at 94:15- 95:11). Accordingly, throughout the testing process Mr. Cantnrell discusses the massive quantities of stillage they were aiming to process. (*see, e.g.*, Ex. 64, DX 381, Ex. 65, DX 111, Ex. 66, at GCS000383, Ex. 67, DX 220, Ex. 19, ‘858 col. 1:51-52 and 63, and 2:11-12).

107. Alfa Laval and Mr. Barlage understood and agreed that the work done in connection with the corn oil extraction concept was to be kept confidential. Alfa Laval and VDT signed a “Non-Disclosure Agreement” as part of the “Allied Supplier Agreement” between the companies in October 2002. (Ex. 61, DX 118 at GCS000337-340). This agreement specified that “[t]he confidentiality obligations will continue throughout the Term hereof and thereafter for five years from the later of the date of termination or the date of disclosure of the Confidential Information.” (*Id.* at GCS000340; *see also* Ex. 61, DX 118 at GCS000337 (protecting VDT information and improvements)). As for Mr. Lauderbaugh, on June 23, 2003 he signed an “Agreement for Confidentiality, Protection of Proprietary Information, Assignment of Inventions, and Non-Solicitation” acknowledging that Trident would be entrusted “with highly sensitive, confidential, restricted and proprietary information.” (Ex. 68, DX 356).

D. The Testing of Potential Corn Oil Extraction Techniques with Agri-Energy

108. In June of 2003, Mr. Cantrell reached out to Mr. Sommers of Agri-Energy. (Ex. 55, Cantrell Vol. I Dep. at 100:16-18 and Ex. 56, Deposition of David Cantrell, Vol. II (“Cantrell Vol. II Dep.”) at 251:11-254:17). Mr. Cantrell, who had previously worked with Mr. Sommers, proposed that Agri-Energy let the Research Team access its ethanol facility to test the various by-product streams and start researching whether corn oil could be extracted from any of those streams. (*Id.* at 100:16-18).

109. Agri-Energy agreed to work with the inventors confidentially during the research and development process. [REDACTED]

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110. Agri-Energy knew that Mr. Cantrell and Mr. Winsness had not yet developed a method that could be used for removing corn oil from waste stillage. (Ex. 39, Sommers Dep. at 33:1-9, 465:15-466:6; Ex. 63, DX 101; Ex. 69, DX 240 at AGRI0000450; Ex. 57, Deposition of David Cantrell, Vol. V (“Cantrell Vol. V Dep.”) at 812:18-814:12; Ex. 70, DX 106). Agri-Energy also understood that the testing might not result in a usable process, and that it might not be able to recover any significant quantity of corn oil. (Ex. 39, Sommers Dep. at 33:1-9, 465:15-466:6; Ex. 63, DX 101; Ex. 69, DX 240 at AGRI0000450; Ex. 57, Cantrell Vol. V Dep. at 812:18-814:12; Ex. 70, DX 106).

1. The June 2003 Bench Testing of Thin Stillage

111. On June 5, 2003, Mr. Cantrell requested that Agri-Energy collect five-gallon samples of both thin stillage and concentrated thin stillage – or syrup – from its plant and send it to Mr. Barlage at Alfa Laval for testing. (Ex. 64, DX 381; Ex. 63, DX 101; Ex. 7, Dep. at 132:11-138:20). At the time, Barlage was unaware of the purpose of the test (Ex. 7, Barlage at 139:9-140:11).

112. Mr. Cantrell requested both thin stillage and concentrated thin stillage because his team had not yet, at the time, chosen a location in the ethanol production process from which corn oil could best be extracted. (Ex. 63, DX 101; Ex. 64, DX 381). Indeed, Agri-Energy believed that Mr. Cantrell wanted to extract oil from Agri Energy’s thin stillage, , and that the

corn oil extraction process was going to be similar to processes used in the poultry industry to remove fat from liquid waste *prior* to evaporation. (Ex. 39, Sommers Dep. at 33:1-22).

113. Mr. Barlage's testing was to remain confidential. In a first e-mail dated June 5, 2003, Mr. Cantrell explained that "we should be able to test some equipment on site," and specified that "[Agri-Energy] will work with us confidentially in order to have the first opportunity to purchase the system." (Ex. 63, DX 101). That need for secrecy was confirmed in a second June 5, 2003 e-mail from Mr. Cantrell to the Research Team, in which Mr. Cantrell declared that "[w]e should be confidential about our research until we determine the results." (Ex. 64, DX 381; *see also* Ex. 71, DX 136 (reiterating that "[w]e are keeping the details confidential until the test is complete and we are ready to solicit the entire market at once").

114. In a third June 5, 2003 email, this time to Jay Sommers and Gerald Winter of Agri-Energy, Cantrell forwarded information relating to VDT's poultry system. (Ex. 72, DX 110). Agri-Energy understood that in the third e-mail, Cantrell was simply explaining that the module that might be used to house a corn oil extraction system (if the process to extract corn oil were to work) may comprise a "modular design" or "all-contained unit" which was similar to the "modular design" of the system employed by VDT in the poultry industry. (Ex. 39, Sommers Dep. at 31:1-33:22) Although Mr. Cantrell referred to the structure as a "centrifuge module", Agri Energy at that time had no understanding, and Cantrell did not explain how the separation of corn oil may be achieved, or how a centrifuge fit into the process to achieve separation of animal fat in the poultry industry. (*Id.*; Ex. 72, DX 110.) Mr. Cantrell explained that the corn oil removal system would try a centrifuge similar to the one used in the VDT poultry system, and that the poultry system had a modular design. (Ex. 72, DX 110; Ex. 39, Dep. at 31:1-33:22).

115. The inventors carefully defined the parameters of the test for Mr. Barlage. Specifically, Mr. Cantrell and Mr. Winsness instructed Mr. Barlage to run the five-gallon samples through a hot spin test, as well as through a continuous bowl gyro centrifuge, and to report the results. (Ex. 7, Barlage Dep. at 134:12-16 and 136:16-25). Mr. Barlage received calls from each of the inventors “quite regularly” during the testing process. (*Id.* at 136:21-25).

116. As instructed, Mr. Barlage performed a hot spin test on the thin stillage and concentrated thin stillage samples, which involved heating and spinning the test tubes for 20 minutes at 80°C. (Ex. 73, DX102 at GCS000490-91; Ex. 7, Barlage Dep. at 134:12-135:19). The thin stillage hot spin test resulted in a small oily emulsion at the top of the test tube, and the syrup spin test yielded a small line of corn oil at the top of the tube. (*Id.*; Ex. 73, DX102 at GCS 000490-91).

117. Mr. Barlage also ran the thin stillage through a continuous bowl gyro centrifuge. (Ex. 73, DX102 at GCS000492; Ex. 7, Barlage Dep. at 158:12-25). But the centrifuge failed to extract corn oil – instead, it only yielded an oily emulsion. (*Id.*) And due to the high level of suspended solids in the thin stillage, the centrifuge clogged up after processing only 2 gallons of thin stillage. (*Id.*; Ex. 73, DX 102 at GCS000492-495).

118. Mr. Barlage reported back to Mr. Cantrell and Mr. Winsness, and noted that since the gyro centrifuge had clogged up so quickly processing thin stillage, he had made the decision not to run the thicker syrup through the centrifuge. (Ex. 73, DX 102 at GCS 000492; Ex. 7, Barlage Dep. at 136:21-25; 175:5-21; Ex. 57, Cantrell Vol. V Dep. at 762:20-763:5; Ex. 73, DX 102).

119. In sum, the results of the June 2003 bench test were inconclusive and were “nowhere close” to showing a reasonable probability of success that corn oil could be extracted

from concentrated thin stillage. (Ex. 7, Barlage Dep. at 143:24-144:3, 386:15-25, 396:7-16). As Mr. Barlage explained, the presence of a small line of oil at the top of the test tube and the fact that oil was present in the emulsion “doesn’t mean anything in the centrifuge world,” (*Id.* at 137:1-13), and did not reasonably suggest that corn oil could be extracted from the back end of an ethanol plant. (Ex. 73, DX 102, at GCS000496; Ex. 7, Barlage Dep. at 137:1-13, 142:21-143:2, 143:24-144:3, 177:25-178:4; Ex. 24, Monceaux Dep. at 156:24-159:17; Ex. 8, Eckhoff Dep. at 38:21-39:13, 146:15-151:3).

120. In fact, Mr. Barlage recommended using at least two centrifuges: one to remove the solids from the thin stillage, and another to attempt to extract the corn oil from the remaining stream. (Ex. 73, DX 102 at GCS000496; Ex. 7, Barlage Dep. at 158:12-25; 175:5-21; Ex. 57, Cantrell Vol. V Dep. at 762:20-763:5). Barlage’s proposal was not adopted. (Ex. 35, Deposition Transcript of David Winsness, Vol. VI (“Winsness Vol. VI Dep.”) at 901:12-902:2, 989:3-990:23)

121. Mr. Barlage’s recommended approach tracked the one disclosed in Rosten, wherein the solids are first removed with a centrifuge, producing an oil/water emulsion, and the fat is then removed from the emulsion using a second centrifuge. (Ex. 73, DX 102 at GCS000496; Ex. 41, Rosten, 1:44-50; 2:13-33, 37-48, 39-41, 43-48 & Fig. 1; 2:50 – 3:3; 3:1-3;3:37-39; Ex. 1, Eckhoff Van Gerpen Rep. ¶¶ 126-131; Ex. 74, Eckhoff Rebuttal Report – Monceaux ¶¶ 129-134).

122. For Mr. Cantrell’s team, the June 2003 bench test was deemed to be “a pretty big failure, especially since it, you know, clogged the gyro tester. So there was not much optimism that came out of this test other than [Cantrell] wanted to see a machine in [Agri-Energy’s] plant

to see if it would work or not.” (Ex. 57, Cantrell Vol. V Dep. at 753:23-754:5; Ex. 32, Winsness Vol. III Dep. at 549:15-550:21, 552:22-553:3).

123. The layer of oil at the top of the test tube motivated Cantrell to undertake further testing. (Ex. 55, Cantrell Vol. I Dep. at 105:20-108:10). Even so, the corn oil extraction process was not ready for patenting as of June 2003. (Ex. 57, Cantrell Vol. V Dep. at 753:23-754:5; Ex. 32, Winsness Vol. III Dep. at 549:15-550:21, 552:22-553:3; Ex. 3, Reilly 119:25-122:20; Ex. 7, Barlage Dep. at 137:1-13; 142:21-143:2; 143:24-144:3; 177:25-178:4; Ex. 24, Monceaux Dep. at 156:3-159:17; *see also*, Ex. 8, Eckhoff Dep. at 38:21-39:13 and 146:15-151:3; Ex. 1, Eckhoff Van Gerpent Rep. ¶¶ 65-78).

2. The July 2003 Gyro Testing at Agri-Energy

124. After reviewing Mr. Barlage’s testing report, Mr. Cantrell sent an e-mail to Mr. Winter and Mr. Sommers at Agri-Energy, among others, on June 29, 2003. (Ex. 65, DX 111; Ex. 58, Cantrell Decl. at ¶ 22). That email set out the next step in the inventors’ approach to testing methods of corn oil recovery from ethanol plants. (Ex. 65, DX 111; Ex. 58, Cantrell Decl. at ¶ 22).

125. That next step involved Mr. Barlage testing whether corn oil could be extracted from concentrated thin stillage at Agri-Energy’s plant using a small gyro centrifuge. (Ex. 65, DX 111; Ex. 58, Cantrell Decl. at ¶ 24). Mr. Cantrell’s email noted that if the small gyro test at Agri-Energy suggested that a full scale in-plant test would be worthwhile, such a test would be performed on Agri-Energy’s premises to determine whether the corn oil extraction method worked for its intended use and in its intended environment. (Ex. 65, DX 111; Ex. 58, Cantrell Decl. ¶ 25).

126. Mr. Barlage went to Agri-Energy on July 10, 2003 to perform the small gyro test. (Ex. 7, Barlage Dep. at 237:14-238:9) Mr. Cantrell and Mr. Winsness had previously specified

for Mr. Barlage the testing protocol to be followed, including the location from which to obtain the syrup test samples and the method of processing them through the test machine. (Ex. 7, Barlage Dep. at 160:12-25).

127. Pursuant to those instructions, Mr. Barlage poured concentrated thin stillage into the gyro centrifuge to perform his test. (Ex. 7, Barlage Dep. at 155:8-158:25). But after extracting a small amount of corn oil, the gyro centrifuge quickly clogged up, requiring Mr. Barlage to disassemble and clean it. (Ex. 7, Barlage Dep. at 155:8 - 158:25; Ex. 75, Deposition Transcript of Michael Stanley (“Stanley Dep.”) at 73:21-74:18). Mr. Barlage repeated the process several times, with the same result – the centrifuge clogged up at each attempt. (*Id.*) As a result, after six hours of testing Mr. Barlage was only able to run eight quarts of syrup through the test gyro centrifuge. (*Id.*)

128. Based on the results of his testing to that point, Mr. Barlage did not have any faith that corn oil could be extracted from the back-end of an ethanol plant. (Ex. 7, Barlage Dep. at 158:9-25; 161:16-162:2). That concern was shared by Mr. Lauderbaugh, a witness to the July 10, 2003 test, who deemed the test to have been a failure. (Ex. 75, Deposition Transcript of Mark Lauderbaugh (“Lauderbaugh Dep.”) at 107:21-108:15).

129. Nevertheless, Mr. Cantrell remained hopeful. (Ex. 56, Cantrell Vol. II Dep. at 274:9-17). He understood, however, that only actual in-plant testing could prove his theory. (*Id.*; Ex. 58, Cantrell Decl. ¶ 29; Ex. 77, Expert report of Dr. Steven Eckhoff in Rebuttal to the Expert Report of Messrs. Jon Van Gerpen, Ph. D.; Ken Kyte and Robert G. Riley, Jr. (“Eckhoff Riley Rep.”) at ¶¶ 79-80, 82).

130. After the second test, it was reported internally by Agri-Energy that the this “testing on the corn oil extraction project” still looked “promising.” (Ex. 78, DX 214)

131. A POSA would not be able to predict whether a separation will be successful without actually testing “equipment in-in a facility.” (Ex. 7, Barlage Dep. at 137:1-13; 142:21-143:2; 143:24-144:3; 177:25-178:4 *see also* 149:5-14 (discussing failures with chicken broth); Ex. 73, DX 102 at GCS000496; Ex. 42, Ellis Dep. at 12:17-13:11, 30:16-31:13; [REDACTED]

[REDACTED] Ex. 24, Monceaux Dep. at 156:19-159:17; Ex. 3, Reilly Dep. at 28:13-25 (in plant testing in general), 30:6-15 same; Ex. 1, Eckhoff Van Gerpen Rep. ¶¶ 81-84, *see e.g.* Ex. 40, Vick Dep. at 31:6-33:25, 105:11-106:13; Ex. 79, DX 1253 UWGP002711; Ex. 30, Copa Dep. at 27:22-36:20; 63:16-69:5; *see also* Ex. 13, McKenna Dep. at 332:22-334:11, 359:11-361:5).

3. The July 2003 Proposal for a Full-Scale In-Plant Test

132. Mr. Cantrell had outlined in his June 29, 2003 e-mail some of the centrifuges that might be used for an in-plant test, including a three phase nozzle machine or a solids discharging machine. (Ex. 65, DX 111). At the time of the email, however, it was still not clear to Mr. Cantrell or to Agri-Energy whether the concept of extracting corn oil from the back-end of an ethanol plant would work. (Ex. 39, Sommers Dep. at 53:7-14; Ex. 58, Cantrell Decl. ¶ 23).

133. In order to implement that full-scale in-plant testing, the inventors drafted a letter to Agri-Energy dated July 31, 2003, laying out his proposal for the test. (Ex. 65, DX 111; Ex. 55, Cantrell Vol. I Dep. at 138:10-13).

134. The July 31, 2003 letter specified that, for purposes of the test, VDT would “allow Agri-Energy 60 days to operate” the “trial Oil Recovery System” at its premises. (Ex. 66, at GCS000383). Notably, the letter refers to the oil separation module as a “test module” and the process as a “trial process.” (*Id.*)

135. The 60 day period was the period contemplated by Cantrell and Winsness to fully test whether corn oil could be extracted from the back-end of Agri-Energy's facility. (Ex. 58, Cantrell Decl. ¶ 32). If after 60 days the testing was deemed successful, Agri-Energy would have the opportunity to purchase the system for \$423,000. (Ex. 66, at GCS000383; Ex. 63, DX 101; Ex. 55, Cantrell Vol. I Dep. at 149:11-150:2; Ex. 34, Deposition Transcript of David Winsness, Vol. V ("Winsness Vol. V Dep.") at 783:11-786:1).

136. The July 31, 2003 letter stated that certain discoveries would result from the "trial process," that Agri-Energy would not own those discoveries, and that Agri-Energy would be obligated to maintain all such discoveries as the confidential property of VDT. (Ex. 66, at GCS000383). Moreover, the letter required Agri-Energy to "protect the confidential information and not to purchase a reverse-engineered system from any other organization that infringes on the VDS process and/or process patent." (Ex. 66, at GCS000383; Ex. 39, Sommers Dep. at 72:14-22).

137. Cantrell did not intend the July 31, 2003 letter to be an offer to sell an apparatus because Cantrell and Winsness were not ready to sell a full-scale or operative corn oil extraction system. (Ex. 55, Cantrell Vol. I Dep. at 149:11-150:2; Ex. 56, Cantrell Vol. II Dep. 329:3-330:25; Ex. 57, Cantrell Vol. V Dep. 727:21-729:12). Instead, Cantrell only restates what he said in his earlier June 5, 2003 e-mail (before any testing had occurred) which was that if the corn oil extraction system works, as the testing partner, Agri-Energy would have the first opportunity to purchase a system after the testing was completed. (Ex. 63, DX 101; Ex. 11, Ex. 55, Cantrell Vol. I Dep. at 108:12-18, 138:10-13, 149:11-150:2; Ex. 57, Cantrell Vol. V Dep. at 727:6-729:9, 740:13-17, 758:11-759:19, 798:7-12, 799:13-17). The July 31, 2003 letter included the price \$423,000 after the testing was completed, which was meant to incentivize Agri-Energy

to allow the inventors to undertake the full-scale in-plant test. (*Id.*; Ex. 58, Cantrell Decl. at ¶ 32; Ex. 56, Cantrell Vol. II Dep. at 329:3-330:25; Ex. 57, Cantrell Vol. V Dep. at 727:21-729:12.)

138. The letter therefore did not contain a signature line for Agri-Energy to enter into a binding agreement. (Ex. 66, GCS000383-84; Ex. 39, Sommers Dep. at 394:24-395:19). The letter lacked any information regarding modalities and terms of payment, or dates and terms of delivery. (Ex. 39, Sommers Dep. at 379:9-382:10). It also failed to identify the equipment that would be delivered to Agri-Energy for the testing, including the components of what it described as the “test module.” (Ex. 39, Sommers Dep. at 377:23-382:10, 390:10-13; Ex. 80, Deposition Transcript of Brian Roberts-Stanton (“Stanton Dep.”) at 157:5-6; Ex. 4, Harris Dep. at 131:23-132:12, 136:3-25; Ex. 8, Eckhoff Dep. at 184:24-185:7). And it was devoid of “information that matched and concorded with the language of the [patent] claims.” (Ex. 80, Stanton Dep. at 156:2-158:4, 160:2-162:3; Ex. 15, Rockstraw Dep. at 152:1-12).

139. Because other processes were available in 2003 to recover the oil, “mechanically processing,” coupled with Barlage and Cantrell suggested alternatives prior to the letter and Agri-Energy’s understanding that the inventors wanted to extract oil from Agri Energy’s *thin stillage* (SOF ¶¶ 27-29, 35, and 53-69) the patented methods were not inherently required in this vague test proposal. (Ex. 39, Sommers Dep. at 33:1-9, 384:14-385:8 and 385:20-394:19; Ex. 41, Rosten; Ex. 15, Rockstraw Dep. at 152:1-12; Ex. 80, Stanton Dep. at 160:2-162:3; Ex. 11, Greene Dep. at 10:8-10:25; Ex. 42, Ellis Dep. at at 28:3-29:2; *see also* Ex. 40, Vick Dep. at 183:2-187:10; and Ex. 81, DX 1563).

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140. Mr. Cantrell emailed an unsigned copy of the July 31, 2003 test proposal to Agri-Energy and other members of his Research Team on August 1, 2003. (Ex. 82, DX 105). Mr. Cantrell has no recollection of emailing this draft to Agri-Energy, and has no copies of the email in his personal files. (Ex. 57, Cantrell Vol. V Dep. at 798:13-799:4; 811:13-25). His August 1, 2003 e-mail describes the attached unsigned July 31, 2003 letter as a “proposal,” and its contents as a “project.” (Ex. 82, DX 105).

4. The 2004 Full Scale In-Plant Test

141. In the summer of 2003, Mr. Cantrell and Mr. Winsness had access to a used Alfa Laval disk stack centrifuge that could be used for a full scale in-plant test. (Ex. 65, DX111). Mr. Cantrell therefore met with Agri-Energy on August 18, 2003 to iron out the details of their in-plant test. (Ex. 55, Cantrell Vol. I Dep. at 108:5-18). During that meeting, Mr. Cantrell hand delivered signed copies of the July 31, 2003 test proposal to Agri-Energy. (Ex. 66, GCS000383-84; Ex. 55, Cantrell Vol. I Dep. at 140:5-142:23). At that same meeting Cantrell also provided a letter dated August 19, 2003 which stated that before anything could proceed the inventors must “successfully install and test” the corn oil extraction system.(Ex. 70, DX 106; *see also* Ex. 65, DX 111; Ex. 66, GCS000383-84; Ex. 58, Cantrell Decl. at ¶ 33).

142. In anticipation of the in-plant test, the inventors had instructed their colleague Mr. Dyer to create a simple drawing of the system considered for installation at Agri-Energy’s plant (the “July 22 figure”). (Ex. 83, DX 112; Ex. 9, Dyer Dep. at 102:7-10). The inventors provided Mr. Dyer with information concerning the equipment they wanted to test, but none regarding the actual processes to be followed. (Ex. 9, Dyer Dep. at 95:7-96:7, 102:7-103:8). Thus, the July 22

Figure does not specify a process, and depicts only generic hardware processing an unidentified “Incoming Product”. (Ex. 83, DX 112; Ex. 15, Rockstraw Dep. at 146:10-148:15; Ex. 9, Dyer Dep. at 220:17-222:15).

143. The generic July 22 figure is not sufficiently specific so as to enable a person skilled in the art to practice the methods of the invention claimed in the patents-in-suit. (Ex. 9, Dyer Dep. at 220:17 - 222:15; Ex. 32, Winsness Vol. III Dep. at 485:3-25; Ex. 83, DX 112; Ex. 1, Eckhoff Van Gerpen Rep. ¶¶65-83).

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144. Shortly after the August 2003 meeting with Agri-Energy, Alfa Laval sold the test centrifuge the inventors intended to use for the in-plant test. (Ex. 56, Cantrell Vol. II Dep. at 338:23-339:25). Mr. Cantrell was forced to spend the next several months searching for another centrifuge with which to conduct the in-plant test. (*Id.* at 338:23-340:16).

145. During that time, neither Mr. Cantrell nor Mr. Winsness undertook to offer for sale, sell or otherwise commercialize a corn oil extraction system. (Ex. 58, Cantrell Decl. ¶ 35; Ex. 18, Winsness Decl. at ¶ 24). Instead, the inventors stuck with the plan to undertake a full scale in-plant test of the system at Agri-Energy. (Ex. 58, Cantrell Decl. ¶ 35; Ex. 18, Winsness Decl. at ¶ 24).

146. To that end, Mr. Cantrell sent a letter to Agri-Energy dated February 9, 2004. (Ex. 85, DX 148.) That letter again raised the prospect of conducting a “research trial” of the corn oil extraction system over a thirty day period. (*Id.*) And once again, the letter confirmed

that all testing was to remain “confidential,” and that Agri-Energy would have no rights to any inventions. (*Id.*)

147. In furtherance of that research trial, in the late winter of 2003, Mr. Cantrell contacted Brian Pike at Alfa Laval about renting another centrifuge for testing purposes. (Ex. 39, Sommers Dep. at 120:14-18, 408:9-409:13; Ex. 67, DX 220; Ex. 86, DX 1574; Ex. 87, Hummel Dep. at 145:2-146:22). [REDACTED]

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[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

148. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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149. On May 26, 2004, the full scale in-plant test of the inventor’s corn oil extraction process began at Agri Energy. (Ex. 90, DX 143; Ex. 56, Cantrell Vol. II Dep. at 361:7-10; Ex. 91, DX 264). The test centrifuge was set up at the back-end of the Agri-Energy ethanol plant – downstream of the evaporators – and the concentrated thin stillage was spun to determine whether corn oil could be extracted. (Ex. 58, Cantrell Decl. ¶ 36; Ex. 90, DX 143 at

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AGRI0000457; Ex. 92, DX 153). As the test centrifuge belonged to Alfa Laval, Dell Hummel assisted in setting up the centrifuge. (Ex. 7, Dep. at 203:25-205:17).

150. The inventors were heavily involved in the testing procedure. (Ex. 18, Winsness Decl. at ¶ 25). They instructed Agri-Energy on where to install each component of the oil recovery system, continually monitored the testing process, and collected data from the testing. Ex. 75, Stanley Dep. at 46:18-22, 51:1-52:12, 82:7-23; Ex. 84, Nelson Dep. at 31:22-32:6; Ex. 31, Deposition Transcript of David Winsness, Vol. I (“Winsness Vol. I Dep.”) at 225:7-25; Ex. 92, DX 153; Ex. 93, DX 150; Ex. 56, Cantrell Vol. II Dep. at 395:8-397:14; Ex. 94, DX 114). Winsness was not able to make any representations as to whether the application would work in a plant until well after this in-plant testing occurred. (*See* Defendants’ SJ-Ex.K- Winsness email dated February 2005).

151. By May 31, 2004, the inventors concluded that the test results demonstrated that corn oil could be successfully extracted from the back-end of an ethanol plant using a centrifuge, at least over a short period of time. (Ex. 69, DX 240 at AGRI0000450; Ex. 90, DX 143; Ex. 92, DX 153 at GCS000535; Ex. 95, DX 154 at GCS000760; Ex. 33, Deposition Transcript of David Winsness, Vol. IV (“Winsness Vol. IV Dep.”) at 641:2-661:14). The inventors concluded that it had been a “very positive test.” (Ex. 69, DX 240 at AGRI0000450; see also Ex. 90, DX 143 at AGRI0000454 “very successful first test”).

152. The same day, Mr. Cantrell sent an e-mail out to his Research Team congratulating everyone “on a very successful first test” and stating: “[r]emember, removing the oil from the syrup has never been done before.” (Ex. 94, DX 114). He also noted that “it is VERY IMPORTANT to keep the test and testing results confidential,” and asked “everyone included in th[e] e-mail to honor this.” (*Id.*) Email recipients included representatives of Agri-

Energy and Alfa Laval. *Id.* Finally, Mr. Cantrell reiterated that since Agri-Energy had acted as the inventors' testing partner, "the first system and the benefits of early marketing opportunities will be offered to [Agri-Energy] for [its] assistance." (*Id.*)

153. After completion of the in-plant testing in or around May 2004, the inventors began the process of collecting information necessary to prepare patent applications in connection with their technology. (Ex. 92, DX 153 at GCS000535; Ex. 33, Winsness Vol. IV Dep. at 641:2-661:14). Those patent applications eventually issued into the patents-in-suit. (Ex. 18, Winsness Decl. at ¶ 26).

VI. CORN OIL EXTRACTION AFTER THE INVENTION

A. Cantrell and Winsness Introduce the Idea to the Industry

156. Only after the filing of the provisional patent application in August of 2004 did the inventors first begin offering oil extraction systems for sale to the ethanol industry, beginning with their research partner, Agri-Energy, in August of 2004. (Ex. 96, DX 236; Ex. 75, Lauderbaugh Dep. at 45:6-15; 149:14-17; Ex. 35, Winsness Vol. VI Dep. at 908:6-912:5, 1072:11-19; Ex. 97, DX 243; Ex. 98, DX 363; Ex. 99, Trident__000024-27; Ex. 100, GCS000690-92; Ex. 101, GCS000695-97).

157. The quotations sent out by or on behalf the inventors following the filing the patent application, including the quotation sent to Agri Energy, set out (1) the equipment that was included in the corn oil extraction system being offered, including a centrifuge, tanks, pumps, a control panel; (2) delivery terms; and (3) payment terms, none of which were included in the July 31, 2003 test proposal. (Ex. 97, DX 243; Ex. 96, DX 236; and Ex. 98, DX 363; Ex. 99, Trident__000024-27; Ex. 100, GCS000690-92; Ex. 101, GCS000695-97; SOF ¶¶ 137-139, *supra*). The inventors described each of these 2004 offers as a "quote" in the document itself,

and did include confidentiality provisions or clauses concerning intellectual property ownership, and did not refer to the corn oil extraction systems being offered for sale as a "test module" as in the July 31, 2003 letter. (Ex. 66, GCS000383-84; Ex. 97, DX 243; Ex. 96, DX 236; Ex. 100, GCS000690-92; Ex. 101, GCS000695-97 and SOF ¶¶ 132-139).

158. In October 2004, Mr. Cantrell approached Defendant ICM to pitch the inventors' corn oil extraction techniques. (Ex. 102, DX 1490; Ex. 103, Burris Dep. at 12:13-14:23; Ex. 104, DX 1510; x. 104, Deposition Transcript of David Vander Griend ("Vander Griend Dep.") at 61:1-19)

159. At the time, ICM was an industry leader in engineering, building, and supporting ethanol plants. (Ex. 106, DX 1512; Ex. 107, DX 1571; Ex. 104, Vander Griend Dep. at 11:20-13:9).

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160. [REDACTED]

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[REDACTED]

[REDACTED]

161. [REDACTED]

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162. Mr. Cantrell and Mr. Winsness arranged in a 2005 industry-wide marketing seminar to introduce the patent-pending technology more broadly to the ethanol industry. (Ex. 71, DX 136; Ex. 36, Winsness Vol. VII at 1072:11-19; Ex. 108, GCS000351-58).

164. The seminar made quite an impression on the industry.

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B. After Years of Failing To Effectively Extract Corn Oil, Ethanol Plants Immediately Adopt Plaintiffs' Technology

165. Plaintiffs' invention upended the industry. (Ex. 1, Eckhoff Van Gerpen Rep. ¶¶ 14-15; Ex. 110, Jessen, H. "Corn Oil Makes The Grade", Ethanol Producer Magazine, April 16, 2013, pp. 1-3 (www.ethanolproducer.com/articles/9755/corn-oil-makes-the-grade) ("Jessen Article"); Ex. 111, Renewable Fuel Standard Program (RFS2) Regulatory Impact Analysis ("RFSP") at 94 <http://www.epa.gov/otaq/renewablefuels/420r10006.pdf>; Ex. 12, Babcock Dep. at 36:2-37:23; Ex. 112, The Jacobsen Report: Distiller's Corn Oil 2012 GCS_178145 ("Jacobsen Report")). Whereas all previous attempts at profitably extracting corn oil had failed, practically the entire industry enthusiastically adopted Plaintiffs' groundbreaking – and highly profitable – technology. (Ex. 13, McKenna Dep. at 332:22-334:5 and 359:11-361:5; Ex. 8, Eckhoff Dep. at 493:21-22, 495:13-21, 497:6-8, 503:2-8; Ex. 1, Eckhoff Van Gerpen Rep. ¶¶ 14-15; Ex. 113, Bryan, T. "Making Customer-Driven Corn Oil Decisions," Ethanol Producer Magazine, April 16, 2013 ("Bryan Article"); *see also* Ex. 40, Vick Dep. at 52:18-22; Ex. 6, Van Gerpen Dep. at 120:21-25).

1. Early Failed Attempts to Extract Corn Oil

166. At the time of the invention, many in the industry had attempted to extract corn oil from thin stillage (including by using centrifuges) but had been unsuccessful. (Ex. 1, Eckhoff Van Gerpen Rep. ¶¶ 14-15).

167. Plaintiffs' expert Professor Steven Eckhoff, for example, has worked with the ethanol industry throughout his career, (Ex. 1, Eckhoff Van Gerpen Rep. ¶¶ 9-16 and exhibit B

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(curriculum vitae); Ex. 8, Eckhoff Dep. at 493:21-22; 495:13-21; 497:6-8; 503:2-8). In the late 1990's and into the early 2000's, he considered ways to recover corn oil from the post-fermentation by-products, including by using a centrifuge and membranes. (Ex. 8, Eckhoff Dep. at 61:2-18; Ex. 1, Eckhoff Van Gerpen Rep. ¶ 14-15).⁵ But he understood that others in the ethanol industry had tried and failed to extract corn oil from thin stillage, and did not pursue this alternative. (Ex. 8, Eckhoff Dep. at 61:15-18; Ex. 1, Eckhoff Van Gerpen Rep. ¶ 14-15). Defendants' Experts fared no better, since none of them ever attempted to recover corn oil from an ethanol plant by any method. (Ex. 3, Reilly Dep. at 78:12-24; Ex. 4, Harris Dep. at 92:19-22; Ex. 5, Yancey Dep. at 62:17-65:23, 74:10-17; Ex. 24, Monceaux Dep. at 55:5-15, 96:24-97:13, 100:9-15.)

168. As a result, in 2003-2004, the ethanol industry continued to focus on inefficient methods of recovering oil from their byproducts. (Ex. 39, Sommers Dep. at 297:16-298:20; Ex. 84, Nelson Dep. at 35:18-38:3; Ex. 75, Stanley Dep. at 83:5-10; Ex. 11, Greene Dep. at 10:8-11:25; Ex. 42, Ellis Dep. at 25:3-29:2; *see also* (Ex. 40, Vick Dep. at 30:4-37:5, 145:8-146:17 and 183:2-187:10; Ex. 81, DX 1563; Ex. 87, Hummel Dep. at 159:25-162:15; Ex. 6, Van Gerpen Dep. 83:17-25). [REDACTED]

[REDACTED]

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169. At the time of the invention, no one other than the inventors had ever attempted to centrifuge concentrated thin stillage in an ethanol production facility. (Ex. 55, Cantrell Vol. I Dep. at 146:19-147:3). Indeed, the many prior unsuccessful attempts to separate corn oil from thin stillage made it counterintuitive to try and extract oil from concentrated syrup. (Ex. 19, '858 Patent at col. 1, line 52 through col. 2 line 15); (Ex. 8, Eckhoff Dep. at 36:4-24; Ex. 1, Eckhoff Van Gerpen Rep. ¶¶ 14-15; Ex. 26, Hammond Dep. at 278:1-5, 284:15-25; Ex. 5, Yancey Dep. at 134:10-19).

2. There Was a Long-Felt Need for an Efficient Corn-Oil Extraction Process in the Ethanol Industry

170. The ethanol industry has always known that valuable corn oil was trapped in the by-products of ethanol production, and has long sought a way to recover this oil. (Ex. 114, DX 1198; Ex. 115, DX 1560 at GEA 19320; Ex. 116, DX 1256 at UWGP002714; Ex. 39, Sommers Dep. at 42:10-18, 349:1-352:20 and 461:19-22; Ex. 3, Reilly Dep. at 132:7-134:7; Ex. 102, DX 1490; Ex. 40, Vick Dep. at 105:6-113:21; 148:5-150:7, 151:15-160:23; Ex. 114, DX 1198; Ex. 115, DX 1560 at GEA 19320; Ex. 116, DX 1256 at UWGP002714; Ex. 79, DX 1253 at UWGP002711).

171. That interest in corn oil extraction was particularly salient in 2003, when the ethanol industry was surviving off of government subsidies, was unable to support itself, and was in dire need of additional sources of revenue. (Ex. 165, Prevost at p. 1 ¶ 6, rt. Col.; Ex. 18, Winsness Dec. at ¶ 31; Ex. 39, Sommers Dep. at 24:15-18; Ex. 1, Eckhoff Van Gerpen Rep. ¶¶ 33-34; Ex. 117, Deposition Transcript of Jeffrey J. Zuerger ('Zueger Dep.') at 22:9-23:4; Ex. 40,

Vick Dep. at 30:4-21; 34:25-42:12, 145:8- 146:17; Ex. 4, Harris Dep. 79:1-5; Ex. 24, Monceaux Dep. at 111:20-23, 184:22-185:8).

172. Corn oil was a perfect candidate as an additional source of revenue. (Ex. 6, Van Gerpen Dep. at 15:15-20:19; *see also* Ex. 102, DX1490; Ex. 12, Babcock Dep. at 55:8-56:14, 58:1-14; Ex. 118, Expert Report of Professor Bruce A. Babcock, (“Babcock Rep.”) at p. 12 Fig. 3; Ex. 104, Vander Griend Dep. at 52:7-53:20; Ex. 3, Reilly Dep. at 67:20-69:9; 132:12-134:7; Ex. 5, Yancey Dep. at 21:7-24:7 and 49:8-17; Ex. 119, Expert Report of Professor Gerald C. Shurson in rebuttal to the Expert Report of Professor Bruce A. Babcock (“Shurson Rep.”) at ¶¶ 33, 63-86).

173. [REDACTED]

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174. Corn oil extraction was particularly interesting for plants because the separated oil was valuable, but also because removing it from the thin stillage did not decrease the value of the remaining byproducts in the thin stillage. (Ex. 41, Rosten 1: 25-28 and 3:l. 4; Ex. 165, Prevost p. 1 ¶ 6; Ex. 26, Hammond Dep. at 302:22-303:4; Ex. 4, Harris Dep. at 85:5-16; Ex. 24, Monceaux

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Dep. at 176:19-177:16; Ex. 3, Reilly Dep. at 29:15-30:16, 132:13-134:7, 163:4-164:6; Ex. 11, Greene Dep. at 28:18-22, 33:23-34:4, 46:6-23, 47:7-17, 48:18-24; Ex. 119, Shurson Rep. ¶¶ 24-32, 40-49; Ex. 12, Babcock Dep. at 140:19-141:13; Ex. 111, RFSP at 96 www.epa.gov/otaq/renewablefuels/420r10006.pdf). Those byproducts could still be formed into DDGS and sold as animal feed. (*Id.*)

175. Removing oil from thin stillage could improve the efficiency and cost-effectiveness of the DDGS drying process. (Ex. 11, Greene Dep. at 27:16-30:22; Ex. 104, Vander Griend Dep. at 76:11-25; Ex. 120, Deposition Transcript of Kim Supercynski (“Supercynski Dep.”) at 42:3-44:22; Ex. 18 Winsness Decl. at ¶ 32; Ex. 119, Shurson Rep. ¶¶ 49-83; Ex. 11, Greene Dep. at 27:16-30:22; Ex. 104, Vander Griend Dep. at 76:11-25; Ex. 120, Supercynski Dep. at 42:3-44:22; Ex. 119, Shurson Rep. ¶¶ 49-83; Ex. 121, Deposition Transcript of Scott Blumhoefer (“Blumhoefer Dep.”) at 24:12-26:21; Ex. 53, Doyal Dep. 2013 at 51:15-53:14; Ex. 15, Rockstraw Dep. at 164:7-165:19; Ex. 12, Babcock Dep. at 79:22-83:5).

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176. [REDACTED]

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177. [REDACTED]

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3. The Industry Adopted the Technology *En Masse*, Often Without Licensing It

178. Shortly after the inventors disclosed and publicized their patented invention, the market adopted the technology en masse. (Ex. 113, Bryan Article; Ex. 40, Vick Dep. at 52:18-22; Ex. 6, Van Gerpen Dep. at 120:21-25). But some of the most eager adopters of the technology were also the most blatant infringers of Plaintiffs' patents. (MDN 54, GEA Third Amended Complaint ("GEA 3rd Amended Compl.") at ¶ 37; Ex. 40, Vick Dep. at 167:6-18; Ex. 104, Vander Griend Dep. at 90:1-91:16; Ex. 126, GCS_176066-176277; Ex. 102, DX 1490; Ex. 16, Kreisler 6/26/2012 Dep. at 126:13-21; Ex. 127, Ace's Second Supplemental Responses, Second Supplemental Response to Interrogatory No. 9 ("Ace's 2nd Supp. Resp. to Ints."); Ex. 128, Deposition Transcript of Raymond Baker ("Baker Dep.") at p. 4:19-22; Ex. 129, DX 1132; Ex. 130, Blue Flint's Second Supplemental Answers to First Set of Interrogatories, Answer to

Int. No. BF9 (“Blue Flint’s 2nd Supp. Answers to 1st Set of Ints.”); Ex. 131, Second Supplemental Answer of the Big River Resources Galva, LLC and Big River Resources West Burlington, LLC to Plaintiff GS CLeantTech Corporation’s First Set of Interrogatoires, First Supplemental Answer to Interrogatory No. 15 (“BRWB/BRG 2nd Supp Answers to 1st Set of Ints”); Ex. 132, Rule 30(b)(6) Deposition of Bushmills, Dep. (“Bushmills Dep.”) at 181:13-18; Ex. 133, Rule 30(b)(6) Deposition of Cardinal (“Cardinal Dep.”) at p. 64:14-25; Ex. 134, Rule 30(b)(6) Deposition of Chippewa Valley Ethanol Company (“CVEC Dep.”), at 216:23-217:1; Ex. 131, BRWB/BRG 2nd Supp Answers to 1st Set of Ints; Ex. 121, Blumhoeffter Dep. at 42:6-43:11; Ex. 135, Response to Interrogatory No. 9, Iroquois Supplemental Response to First Set of Interrogatories (“Iroquois Supp. Resp. to 1st Set of Ints.”); Ex. 136, Lincolnland’s Second Supplemental Answers to First Set of Interrogatories, First Supplemental Answer to Interrogatory No. 15 (“Lincolnland’s 2nd Supp. Answers to 1st Set of Ints.”); Ex. 137, Lincolnway’s Supplemental Answers to First Set of Interrogatories, Answer to Int. No. 16 (“Lincolnway’s Supp Answers to 1st Set of Ints”); Ex. 138, Deposition Transcript of Barbara Bontrager (“Bontrager Dep.”) at 27:10-22).

179. [REDACTED]

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[REDACTED] In combination with defendant Flottweg, ICM began marketing and selling corn oil extraction systems using the technology claimed in the patents-in-suit. *See e.g.* (Ex. 139, DX 1514; Ex. 104, Vander Griend Dep. at 65:7-23).

[REDACTED]

[REDACTED]

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180. Defendant Flottweg not only adopted Plaintiffs' claimed methods, but also sought its own patent protection for Plaintiffs' technology. (Ex. 141, United States Patent No. 7,918,458 "Method Of And Device For Increasing The Yield Of Oil Production In A Process Of Producing Bio-Ethanol"). It is the assignee of U.S. Patent No. 7,918,458, which issued on March 29, 2011, and which is directed to a method of obtaining oil from an ethanol production facility "and recovering oil from the concentrated syrup, wherein the step of recovering oil from the concentrated syrup includes using a horizontal axis centrifuge." (*Id.* abstract; claim 1, 6:11-27).

181. Other centrifuge manufacturers, such as Defendant GEA, have adopted very similar approaches to Flottweg's. (GEA 3rd Amended Compl. at ¶¶ 14, 21, 35-37, & 117-118). GEA also sells centrifuges to remove corn oil from concentrated thin stillage. (*Id.*). And it too requires its customers to indemnify GEA for the cost of litigating any alleged infringement of

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Plaintiffs' patents by those customers. (Ex. 40, Vick Dep. at 141:11-142:19 and 193:8-16; 195:18-196:7; *see also* Ex. 142, Deposition Transcript of Eric Kuntz Dep. at 127:15-128:3, 129:3-131:23; Ex. 143, DX 1287 Ex. 139, DX 1514 at IBE001925).

182. Defendant GEA has installed [REDACTED] centrifuges for use in corn oil recovery at "dry-grind" ethanol production facilities. (Ex. 40, Vick Dep. at 128:12-129:12). All are used for processing evaporated thin stillage to recover corn oil. (Ex. 40, Vick Dep. at 128:12-129:12). [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

183. Each of the Defendant ethanol plants practicing CleanTech's patented methods have made millions of dollars selling the corn oil recovered, and GEA, ICM and Flottweg have made millions selling the systems themselves. (MDN 54, GEA Amended Compl. at ¶ 37; Ex. 40, Vick Dep. at 167:6-18; Ex. 105, Vander Griend Dep. at 90:1-91:16; Ex. 126, GCS_176066-176277; Ex. 127, Ace's 2nd Supp. Resp. to Ints.; Ex. 128, Baker Dep. at p. 4:19-22; Ex. 129, DX 1132; Ex. 130, Blue Flint's 2nd Supp. Answers to 1st Set of Ints.; Ex. 131, BRWB/BRG 2nd Supp Answers to 1st Set of Ints; Ex. 132, Bushmills Dep. at 181:13-18; Ex. 133, Cardinal Dep. at p. 64:14-25; Ex. 134, CVEC Dep. at 216:23-217:1; Ex. 131, BRWB/BRG 2nd Supp Answers to 1st Set of Ints; Ex. 121, Blumhoeffer Dep. at 42:6-43:11; Ex. 135, Iroquois Supp. Resp. to 1st Set of Ints.; Ex. 136, Lincolnland's 2nd Supp. Answers to 1st Set of Ints.; Ex. 137, Lincolnway's Supp Answers to 1st Set of Ints; Ex. 138, Bontrager Dep. at p. 27:10-22).

184. Prior to the introduction to the market of the patented methods, no dry mill ethanol plants were extracting corn oil. (Ex. 24, Monceaux Dep. at 124:17-130:22; Ex. 5,

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Yancey Dep. at 24:8-25:8; Ex. 3, Reilly Dep. at 66:8-67:19; Ex. 4, Harris Dep. 79:2-82:18; 107:3-17; Ex. 6, Van Gerpen Dep. at 82:19-84:18; Ex. 15, Rockstraw Dep. at 87:2-88:10; Ex 12, Babcock Dep. at 34:10-35:24, 190:5-191:8; Ex. 27, Riley Dep. at 123:15-125:10; Ex. 1, Eckhoff Van Gerpen Rep. ¶ 15; *see also* Ex. 113, Bryan Article at GCS_181912). But as of February 2013, as much as 70% of dry-grind ethanol facilities were extracting corn oil – all using a centrifuge to separate corn oil from concentrated thin stillage. (Ex. 113, Bryan Article; Ex. 40, Vick Dep. at 52:18-22).

185. Faced with mass infringement of the patents-in-suit, Plaintiff sent letters to specific ethanol plants pursuant to 35 U.S.C. § 154(d) providing the third parties with actual notice of CleanTech's published pending applications of the '858, '516 and '517 patents. (Ex. 145, DX 1017; Ex. 146, DX 1018; Ex. 147, DX 1116; Ex. 148, DX 1375; Ex. 149, DX 1376; Ex. 150, DX 1079; Ex. 151, DX 1080; Ex. 152, DX 1193; Ex. 153, DX 1245; Ex. 154, DX 1422; Ex. 155, DX 1423; Ex. 156, DX 1476; Ex. 157, DX 1477; Ex. 158, DX 1506; Ex. 169, 510; Ex. 159, DX 506; Ex. 160, DX 507; Ex. 174, '154(d) Letter to Lincolnway Energy, LLC dated 10/7/2009; Ex. 175, '154(d) Letter to United Wisconsin Grain Producers dated 10/7/2009; Ex. 176, '154(d) Letter to Al-Corn Clean Fuels dated 10/7/2009; Ex. 177, '154(d) Letter to Lincolnway Energy, LLC dated 7/16/2009, Ex. 178, '154(d) Letter to Al-Corn Clean Fuels dated 7/15/2009). Claims 1 and 2 of the '517 patent are identical to claims 14 and 15 of the published '859 application referenced in the letters sent to Defendants. (Ex. 21, '517 Patent; Ex. 168, United States Application No. 11/122,859 ("859 application")). CleanTech ultimately filed this lawsuit and provided infringement contentions with claim charts to Defendants. (E.g. Ex. 164, Ace Infringement Contentions)

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186. Original claim 14 of the ‘859 application issued as claim 8 of the ‘858 patent with the following changes: A method of recovering oil from thin stillage, comprising, in sequence: evaporating the thin stillage to create a concentrate having a moisture content of greater than ~~45~~ 30% by weight and less than about 90% by weight; and centrifuging the concentrate to recover oil. (Ex. 168, ‘859 application; Ex. 19, ‘858 patent)

187. GreenShift was not able to sell or install any systems in 2009 or 2010, and only managed to install one or two systems in ethanol plants each year from 2011-2013. (Ex. 17, Deposition Transcript of Kevin Kreisler dated 6/13/13 (“Kreisler 6/13/13 Dep.”) at 100:2-101:1).

188. Defendants have objectively recklessly continued infringing (or inducing infringement of) CleanTech’s Patents throughout this suit, despite preliminary injunction briefing (Ex. 169, Related Case No. 1:10-cv-0180-LJM-DML Dkt. Nos. 9 & 31), the Court’s multiple orders on claim construction MDN 169, Order on Claim Construction (“Order on Claim Contr.”), MDN 214, Order on Motion for Clarification, & Supp Order on Claim Constr.), and the U.S. PTO’s issuance of the ‘516, ‘517, and ‘484 patents over Defendants’ infringement and invalidity contentions. (Ex. 20, ‘516 patent, Ex. 21 ‘517 patent, and Ex. 22, ‘484 patent).

4. Plaintiffs Have Licensed Their Patented Technology to Other Ethanol Plants

189. Despite the many infringers of the patents-in-suit, some ethanol plants legitimately practice Plaintiffs’ methods. (Ex. 126, GCS_176066-176277; Ex. 16, Kreisler 6/26/2012 Dep. at 99:12-20, 100:2-101:17).

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[REDACTED]

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190. Not only do Plaintiffs license their technology, they also install systems and provide know-how to their customers to enable them to practice the patented methods. *Id.*

5. The Patented Inventions Received Widespread Industry Recognition and Praise

191. The process in the patents-in-suit has been deemed “revolutionary.” (Ex. 161, ALFA000016-17 *see also* Ex. 170, “New Approach Melds Ethanol, Biodiesel Production,” June 23, 2005, Renewable Energy World (www.renewableenergyworld.com/rea/news/article/2005/06/new-approach-melds-ethanol-biodiesel-production-33754) (quoting Don Endres, CEO of VeraSun Energy stating “[t]his is exciting new technology.”))

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192. Since disclosure of the invention, a commodities price for inedible corn oil is now publicly reported. (Ex 12, Babcock Dep. at 36:2-37:23; Ex. 112, Jacobsen Report). That price had never been reported before Plaintiffs’ inventions were disclosed. (Ex 12, Babcock Dep. at 36:2-37:23). That development is further recognition of the patented inventions’ transformational impact on the industry.

193. Finally, Plaintiffs’ invention was praised by none other than the U.S. Environmental Protection Agency (“EPA”) in 2010. (Ex. 162, GCS_180467-1575 at

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<http://www.epa.gov/otaq/renewablefuels/420r10006.pdf>, pages 54-55, 95-96, 129-131, 142-148; Ex. 163, GCS_180522-523, 563-64, 597-99, 610-16)). The EPA's Renewable Fuel Standard Program (RFS2) Regulatory Impact Analysis reflected its expectation that corn oil extraction would continue to play a major role in the ethanol industry, and designated Plaintiffs' process as an "advanced technology" that could be used to meet the EPA's requirement of a 20% reduction in greenhouse gas emissions. (*Id.*)

STANDARD FOR SUMMARY JUDGMENT

Summary judgment is proper if the evidence before the Court "show[s] that there is no genuine issue as to any material fact and that the movant is entitled to judgment as a matter of law." Fed. R. Civ. P. 56(c); *see also Celotex Corp. v. Catret*, 477 U.S. 317, 322 (1986). A "material fact" is one that "might affect the outcome of the suit under the governing law." *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 248 (1986). In considering a motion for summary judgment, the court must examine all the evidence in the light most favorable to the nonmoving party. *United States v. Diebold, Inc.*, 369 U.S. 654, 655 (1962); *see also Finish Eng. Co., Inc. v. Zerpa Indus. Inc.*, 806 F.2d 1041, 1043 (Fed. Cir. 1986) ("[W]here there are genuine disputed issues of material fact, summary judgment cannot be utilized as a tool for deciding those issues"). The moving party bears the initial burden to show the absence of genuine issues of material fact. *Celotex*, 477 U.S. at 323 (1986). "Summary judgment is not appropriate unless there is no genuine issue of material fact and the moving party is entitled to judgment as a matter of law." *Glass Equipment Dev., Inc. v. Besten, Inc.*, 174 F.3d 1337, 1341 (Fed. Cir. 1999). "[T]he court must ensure that there is no reasonable version of material disputed facts whereby the nonmovant could prevail." *Vivid Tech. Inc. v. Am. Sci. & Eng. Inc.*, 200 F.3d 795, 807 (Fed. Cir. 1999).

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This Court must examine the evidence “through the prism of the evidentiary standard of proof that would pertain at a trial on the merits.” *SRAM Corp. v. AD-II Eng’g, Inc.*, 465 F.3d 1351, 1357 (Fed. Cir. 2006). “Because patents are presumed valid, a moving party seeking to invalidate a patent at summary judgment must submit such clear and convincing evidence of facts underlying invalidity that no reasonable jury could find otherwise.” *TriMed, Inc. v. Stryker Corp.*, 608 F.3d 1333, 1340 (Fed. Cir. 2010).

ARGUMENT

I. THE PATENTS-IN-SUIT ARE NOT INVALID UNDER 35 U.S.C. § 102(b)

Defendants contend that the inventors violated the so-called on-sale bar with a July 31, 2003 letter to ethanol producer Agri-Energy. Under Section 102(b) of the Patent Act, “[a] person shall be entitled to a patent unless . . . the invention was . . . on sale in this country, more than one year prior to the date of the application for patent” 35 U.S.C. § 102(b).⁶ The Supreme Court has set forth a two-part test for application of Section 102(b)’s “on-sale bar.” *Pfaff v. Wells Elecs., Inc.*, 525 U.S. 55 (1998). The bar only applies if the patented method is both: (i) the subject of a commercial offer for sale, and (ii) is ready for patenting before the critical date. *Id.* at 56. Defendants have the burden of demonstrating both prongs of this test by clear and convincing evidence. *Allen Eng’g Corp. v. Bartell Indus., Inc.*, 299 F.3d 1336, 1352 (Fed. Cir. 2002). Defendants fail as a matter of law to meet that burden here. At the very least,

⁶ Section 3(n)(1)(A) and (B) of the AIA provides in relevant part.

In general. Except as otherwise provided in this section, the amendments made by this section shall take effect upon the expiration of the 18-month period beginning on the date of the enactment of this Act, and shall apply to any application for patent, and to any patent issuing thereon, that contains or contained at any time-

(A) a claim to a claimed invention that has an effective filing date as defined in section 100(i) of title 35, United States Code, that is on or after the effective date described in this paragraph;

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whether the July 31, 2003 letter was an offer for sale and whether the invention was ready for patenting at that date are both sharply contested, and summary judgment is inappropriate.

A. Whether There Was a Commercial Offer for Sale of the Method Prior To the Critical Date Is a Sharply Contested Fact Question

Whether the invention was the subject of a commercial offer for sale is a matter of Federal Circuit law, to be analyzed under the general law of contracts. *Group One, Ltd. v. Hallmark Cards, Inc.*, 254 F.3d 1041, 1047 (Fed. Cir. 2001). “Only an offer which rises to the level of a commercial offer for sale, one which the other party could make into a binding contract by simple acceptance (assuming consideration), constitutes an offer for sale under § 102(b).” *Id.* at 1048. The alleged offer “must meet the level of an offer for sale in the contract sense, one that would be understood as such in the commercial community.” *Id.* at 1046-47. “An offer is the manifestation of willingness to enter into a bargain, so made as to justify another person in understanding that his *assent to that bargain is invited and will conclude it.*” *Linear Tech. Corp. v. Micrel, Inc.*, 275 F.3d 1040, 1050 (Fed. Cir. 2001) (emphasis added) (citing Restatement (Second) of Contracts § 24 (1981)).

Defendants allege that David Cantrell’s July 31 letter to Agri-Energy constitutes an offer for sale that triggers the Section 102(b) on-sale bar. But there are genuine disputes of fact on that point. Defendants’ argument also fails as a matter of law, because the system referenced in the letter did not anticipate the claimed methods, and because the letter related to an experimental use of the technology.

1. A Jury Could Find That the Language of the July 31 Letter Did Not Amount To a Commercial Offer for Sale

“The fact that one or more terms of a proposed bargain are left open and uncertain may show that a manifestation of intention is not intended to be understood as an offer or as an

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acceptance.” *Gemmy Indus. Corp. v. Chrisha Creations, Ltd.*, 452 F.3d 1353, 1360 (Fed. Cir. 2006) (citing Restatement (Second) of Contracts § 33(3)). Indeed, a letter that “lack[s] any mention of quantities, time of delivery, place of delivery, or product specifications beyond [a] general statement is not an offer for sale.” *Elan Corp., PLC v. Andrx Pharms., Inc.*, 366 F.3d 1336, 1342 (Fed. Cir. 2004).

That is the case here. The letter itself lacks many of the key terms of an offer. It does not include any description of the system’s specifications – it only vaguely references an “Oil Recovery System.” (SOF ¶¶ 137-139; *see also* Ex. 171, DX 362.) It also fails to specify when – or where – that system would have to be delivered or installed by Greenshift. (SOF ¶ 137-140.) Finally, it is utterly silent as to the modalities of payment, or the terms of payment. (SOF ¶ 138.)

Unsurprisingly then, Agri-Energy’s corporate representative, Jay Sommers, confirmed that the July 31 letter was not an offer for sale. (SOF ¶¶ 138-140.) Mr. [REDACTED]

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[REDACTED] The letter was therefore not a commercial offer for sale under § 102(b); Mr. Sommers could not have made the letter into a binding contract by simple acceptance. *See Group One, Ltd. v. Hallmark Cards, Inc.*, 254 F.3d at 1048 (only an offer “which the other party could make into a binding contract by simple acceptance (assuming consideration), constitutes an offer for sale under § 102(b)”). At the very least, Sommers’s testimony creates a fact dispute concerning

whether the letter alone or in conjunction with any earlier discussions meet the definition of an offer under general contract law.⁷

Comparing the July 31 letter with actual offer letters later issued by Plaintiffs underscores the fact dispute. Plaintiffs' actual offer letters included detailed descriptions of every single component of the system that would be delivered to the target plant. (SOF ¶¶ 156-157.) The August 24, 2004 offer letter to Agri-Energy, for example, explained that the "Skid Mounted System" would "include Separator, Fat Tank and Pump, Sludge/Stickwater Tank and Pump, Crane Hoist and Control Panel," and an "Electric Heating Unit and gate valves." (*Id.*, Ex. 96, DX 236). It also laid out the specifications for the Separator Feed Skid, the Fat Storage Tank, the electric motors, and the Control Panel Package. *Id.* The July 31 letter, by contrast, makes no reference to any of these elements. (SOF ¶¶ 137-140.) The August 24, 2004 offer letter also describes the specific terms of the payment – including a 30% down payment with Purchase Order, 30% at 30 days after receipt of Purchase Order, 30% prior to shipping, and the remaining 10% balance due 15 days after shipping – as well as a time window for delivery of the system: six months from receipt of an order. (*Id.*, Ex. 96, DX 236). Again, the July 31 letter is silent on those points. (SOF ¶¶ 138.)⁸

⁷ If the July 31 letter was something more than a test proposal, it was merely the opening salvo to commence further negotiations with Agri Energy. Such an offer is not an invalidating binding commercial offer for sale. *See Williston on Contracts* (Revised Ed.) vol. 1, Sec. 27; *see also Linear Tech.*, 275 F.3d at 1051 ("In the absence of a clear indication to the contrary, the communications between the LTC sales representatives and the customers must be regarded as merely preliminary negotiations at most designed to enable customers to submit offers to buy.").

⁸ Defendants suggest that a schematic dated July 22, 2003 describes the equipment and method for practicing the invention. (Defendants' Memo In Supp. Of MSJ at 38-40.) However, Agri-Energy admits that it received the schematic after the critical date. (SOF ¶ 145; Ex. 39, Sommers Vol. I 70:14-15)

2. The July 31 Letter Does Not Anticipate the Claimed Invention

The letter is also not a commercial offer for sale because its terms do not match up with the elements of the invention. To trigger the on-sale bar “the subject matter of the sale or offer for sale must satisfy each limitation of the claim.” *Lacks Indus., Inc. v. McKechnie Vehicle Components USA, Inc.*, 300 F. App’x 904, 906 (Fed. Cir. 2008). Defendants must therefore perform a “claim-by-claim and limitation-by-limitation analysis” of “whether the subject matter of the . . . alleged offer[] corresponds to the methods of any” claims. *Id.* Defendants shoulder the initial burden of going forward with evidence that the offer for sale corresponds to the methods of the claims. *Id.* at 908.

Defendants have failed to meet their burden of matching up the terms of the letters with the limitations of the claimed methods. Some of the key components of the invention were, for example, “evaporating water from the thin stillage to form a thin stillage concentrate” (*see, e.g.*, ‘484 Patent 6:11-16) and having that evaporation step take place prior to mechanical processing (*see, e.g., id.*). The July 31 letter simply does not identify the elements of the claimed invention: while it makes a passing reference to an evaporator, it does not identify a centrifuge, or any heating step. (SOF ¶¶ 134, 138-139.) It also fails to address the moisture content of the syrup that is to be processed for corn oil extraction, or the temperature of that syrup, or the location of the system within the ethanol plant’s production chain. *Id.* Most importantly, it omits any description of the steps – and sequence of those steps – Agri-Energy was to take to extract corn oil in its plant. Defendant own expert admits that the July 31 letter is devoid of any details describing the extraction system. *Id.*

The letter does not inherently disclose the limitations of the claimed methods. Inherent disclosure occurs when “the missing descriptive matter is *necessarily* present in the thing described in the reference, and . . . would be so recognized by persons of ordinary skill.

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Continental Can Co. USA, Inc. v. Monsanto Co., 948 F.2d 1264, 1268-69 (1991) (“Inherency . . . may not be established by probabilities or possibilities.”) (emphasis added). Yet that is precisely what Defendants seek to do here. As Agri-Energy’s own representative admitted, nothing in the July 31 letter inherently requires the application of the patented method to recover oil. (SOF ¶ 139; Ex. 39, Sommers Dep. at 33:1-9, 384:14-385:8 and 385:20-394:19). The letter does not specify the stream from which the oil would be recovered, the equipment to be used, or any operating parameters for that equipment. (SOF ¶¶ 138-139.) The letter does not say that any stream exiting a centrifuge will be “substantially oil.” The letter states only that the resulting oil of unspecified purity will either “be cleaned to an acceptable level for boiler fuel, or . . . be sold as a nutritional feed ingredient.” *Id.* And the letter places no obligation on Mr. Cantrell and Mr. Winsness to provide equipment that necessarily or inherently practiced the claims of the patents-in-suit. *Id.* Since the letter did not unambiguously require use of Plaintiffs’ patented methods, summary judgment of invalidity based on Section 102(b) is inappropriate. *Plumtree v Datamize*, 473 F.3d 1152, 1163 (Fed. Cir. 2006) (denying summary judgment where the written agreement “did not unambiguously require use of the patented method”).

3. The Letter Concerned an Experimental Use of Plaintiffs’ Technology

Finally, the July 31, 2003 letter was not a commercial offer for sale because it merely proposed an experimental use. The Federal Circuit has long recognized that the on-sale bar does not apply if “the primary purpose of the inventor at the time of the sale, as determined from an objective evaluation of the facts surrounding the transaction, was to conduct experimentation.” *Allen Eng’g Corp. v. Bartell Indus., Inc.*, 299 F.3d 1336, 1354 (Fed. Cir. 2002). Thus “an inventor who seeks to perfect his discovery may conduct extensive testing without losing his right to obtain a patent for his invention – even if such testing occurs in the public eye.” *Pfaff*, 525 U.S. at 64. That testing can “include[] ‘tests needed to convince [the inventor] that the

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invention is capable of performing its intended purpose in its intended environment.” *EZ Dock*, 276 F.3d at 1352 (emphasis added), (quoting *Gould Inc. v. United States*, 579 F.2d 571, 583 (Ct. Cl. 1978)).

The documents surrounding the transaction between Plaintiffs and Agri-Energy make clear that the July 31 letter referenced an experimental – or “test” – use of Plaintiffs’ technology. The July 31 letter itself refers to the oil separation module as a “test module” and the process as a “trial process,” explains that discoveries would result from the “trial process,” and notes that VDT would own those discoveries. (SOF ¶¶ 116, 124-125, 130, 134, 142, 150, 154.)

Similarly, in a June 29 e-mail, Cantrell maps out steps two and three in the inventors’ three-step test plan to “prove” their “theory” of corn oil extraction. (SOF ¶¶ 124-132) Step two of the test plan included a small gyro test to occur in July 2003. (SOF ¶¶ 124-126.) If that step showed some sign of success, then step three would be a full scale in-plant test at Agri Energy to test whether the corn oil extraction method worked and worked for its intended purpose and in its intended environment. (SOF ¶¶ 105-106, 125, 131.) The July 31 letter was nothing more than the proposal for that third and final step in the test plan mapped out in the June 29 e-mail. (SOF ¶¶ 124-132.)

Contemporaneous documents confirm that the July 31 letter referenced an experimental use of Plaintiffs’ technology:



- Cantrell’s August 19, 2003 letter to Agri-Energy identifies as a goal to “successfully install *and test* the VDS OIL Recovery System.” (SOF ¶ 142.)

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- Cantrell's February 9, 2004 letter refers to a "research trial" and "discoveries resulting from the trial process." (SOF ¶ 148.)

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- Cantrell's May 31, 2004 email to the Research Team, including Agri-Energy, congratulates everyone on a "very successful first test." (SOF ¶ 154.)

Other factors also confirm that the July 31 letter related to an experimental use. In assessing whether the experimental use exception applies, the Federal Circuit considers: (1) the necessity for public testing; (2) the amount of control over the experiment retained by the inventor; (3) the nature of the invention; (4) the length of the test period; (5) whether payment was made; (6) whether there was a secrecy obligation; (7) whether records of the experiment were kept; (8) who conducted the experiment; (9) the degree of commercial exploitation during testing; (10) whether the invention reasonably requires evaluation under actual conditions of use; (11) whether testing was systematically performed; (12) whether the inventor continually monitored the invention during testing, and (13) the nature of contacts made with potential customers. *Allen Eng'g*, 299 F.3d 1353 (quoting *EZ Dock*, 276 F.3d 1357 (Linn, J. concurring)). Those factors at a minimum raise genuine issues of material fact as to whether the July 31 letter to Agri-Energy related to an experimental use.

The nature and timing of Plaintiffs' contacts with potential customers and the degree of commercial exploitation during testing (Factors 9 and 13), makes clear that the July 31 letter referenced an experimental use. It is telling that Cantrell, whom Defendants describe as "a salesman who pursued sales with a vengeance," and who was working for a company "desperate for money" and "in the midst of a financial crisis and facing bankruptcy," never offered to sell

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Plaintiffs' corn oil extraction system between the Spring of 2003 and August of 2004. (SOF ¶¶ 146-147, 156.) Far from actively seeking to distribute the technology, Plaintiffs instead chose to wait months for a new centrifuge to perform their testing with Agri-Energy. *Id.* Only once the tests were completed and showed that their invention worked for its intended purpose did they begin offering their technology to the market. (*Id.*, see also SOF ¶¶ 105-106, 131.) This behavior confirms that Plaintiffs' activities before the critical date relate to an experimental use of the invention. See *Honeywell Int'l. Inc. v. Universal Avionics Sys. Corp.*, 488 F.3d 982, 997 (Fed. Cir. 2007) (noting that "Honeywell did not offer its inventive system to any other customer until well after the critical date" and concluding that its earlier activities related to experimentation).

That Plaintiffs maintained significant control over the testing at Agri-Energy's premises, kept records of the experiments, sent their own agents to help conduct the tests, and continuously monitored the experiments (Factors 2, 7, 8, 12) also support the conclusion that the July 31, 2003 letter related to an experimental use. The record shows that Mr. Cantrell and Mr. Winsness:

- Coordinated the collection of the initial 5 gallon samples from Agri-Energy in June of 2003. (SOF ¶¶ 111-126.)
- Instructed Barlage as to the tests that were to be run on those samples, and had exclusive access to the results of those tests. (SOF ¶¶ 111-112, 115-118.)
- After analyzing those preliminary results, outlined for Agri-Energy the next testing steps that they would take. (SOF ¶¶ 124-125.)
- Sent Barlage to perform the small gyro test at Agri-Energy in July of 2003 with clear instructions on the testing protocols to follow. (SOF ¶¶ 125-127.)
- For the full scale in-plant test in 2004, instructed Agri-Energy on the set up of the test system, and monitored the results of the test. (SOF ¶¶ 151-154.)
- Continually monitored the test system through Agri-Energy. (SOF ¶¶ 151-154.)

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Experimental use is further supported by Plaintiffs' consistent efforts to maintain a cover of secrecy over all their activities (Factor 6). The July 31 letter itself states that "[a]ll discoveries resulting in the trial process shall remain the property of [VDT] *and is confidential information.*" (SOF ¶¶ 136, Ex. 66, at GCS000383 (emphasis added)). Similarly, in two June 5, 2003 emails to his team, Cantrell noted that Agri-Energy would work with them "confidentially in order to have the first opportunity to purchase the system," and that they "should be confidential about [the] research until we determine the results." (SOF ¶ 109, 111-113; Ex. 63, DX 101; Ex. 64, DX 381.) Less than a week later, Mr. Winsness sent an e-mail explaining that VDT was working with Alfa-Laval on a test to be completed in an ethanol plant, but that they were "keeping the details confidential until the test is complete." (SOF ¶ 113; Ex. 71, DX 136.) VDT's agreements with its service providers called for complete confidentiality on the part of the suppliers. (See Ex. 68, DX 356; SOF ¶¶ 107-109.) After the in-plant test in 2004, Cantrell stressed again to his team and the Agri-Energy representatives that it was "VERY IMPORTANT to keep the test and the testing results confidential." (emphasis in original) (SOF ¶ 154; Ex. 94, DX 114.) Agri Energy thus fully understood that it had obligations of confidentiality concerning the testing. (SOF ¶¶ 109, 113, 136, 148, 154.)

Finally, the fact that Plaintiffs' invention was one that required testing on a commercial scale (Factor 1) confirms experimental use. By July of 2003, Mr. Cantrell and Mr. Winsness had results from the June 2003 bench test showing a thin line of oil at the top of a test tube and had results from the July 10, 2003 gyro test where the gyro clogged quickly and repeatedly. (SOF ¶¶ 117-122, 127-131, see also SOF ¶¶ 36-52)

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Cantrell remained “hopefully optimistic” but had to move onto step three of his test plan, the full scale in-plant test at Agri Energy. (SOF ¶¶ 122-132, 147-155, *see also* SOF ¶¶ 104-106 and 131). But it was only in the Spring of 2004 that Plaintiffs were able to conduct the third step of their testing, a full-scale in-plant test involving the centrifugation of concentrated thin stillage. (*Id.*) Only then – well after the critical date – were Plaintiffs able to confirm that their corn oil extraction method worked for its intended purpose and in its intended environment. (*Id.*)⁹

B. Whether the Invention Was Ready for Patenting Prior to the Critical Date Is a Genuine Issue of Material Fact

The second prong of the *Pfaff* test requires Defendants to prove by clear and convincing evidence that the invention was “ready for patenting” prior to August 17, 2003. *See Pfaff v. Wells Elecs., Inc.*, 525 U.S. at 56. That requirement can be satisfied in at least two ways: (1) by proof that the invention was reduced to practice before the critical date, or (2) by proof that prior to the critical date the inventor had prepared drawings or other descriptions of the invention that were sufficiently specific to enable a person skilled in the art to practice the invention. *Id.* at 66-68. A number of genuine issues of material fact preclude determining whether either standard is met here.

1. The Invention Was Not Reduced To Practice Prior To the Critical Date

The word “invention,” as used in § 102(b), “must refer to a concept that is complete, rather than merely one that is ‘substantially complete.’” *Pfaff*, 525 U.S. at 66. “An invention is

⁹ That the various stages of testing may not have resulted in a fundamental change in the method for corn oil extraction does not negate the conclusion that the Agri-Energy testing was an experimental use. *See Honeywell*, 488 F.3d at 997 (“[A]lthough the experimentation did not alter any specific part of Honeywell’s claimed system, this aspect of the record does not prejudice Honeywell’s invocation of experimentation to negate any on-sale bar.”).

reduced to practice when the patentee has an embodiment that meets every limitation and operates for its intended purpose.” *Honeywell Int’l.*, 488 F.3d at 997 (emphasis added). Actual reduction to practice in the context of an on-sale bar issue ***usually requires testing under actual working conditions in such a way as to demonstrate the practical utility of an invention for its intended purpose beyond the probability of failure***, unless by virtue of the very simplicity of an invention its practical operativeness is clear.” MPEP 2133.03(c) (emphasis added). “Testing is required to demonstrate reduction to practice in some instances because without such testing there cannot be sufficient certainty that the invention will work for its intended purpose.” *In re Omeprazole Patent Litigation*, 536 F.3d 1361, 1373 (Fed. Cir. 2008) (emphasis added). To demonstrate reduction to practice, Defendants must prove that the inventors: “(1) constructed an embodiment or performed a process that met all the limitations and (2) determined that the invention would work for its intended purpose.” *Id.* at 1373.

As noted above, Plaintiffs required the in-plant testing at Agri-Energy to determine whether the invention was complete – *i.e.* worked for its intended purpose. (SOF ¶¶ 36-52, 104-106, 131) Mr. Barlage’s bench test in July 2003 had shown that a hot spin test of thin stillage resulted in a small oily emulsion at the top of the test tube, and a hot spin test of the concentrated thin stillage resulted in a sample with a small thin line of oil at the top of the test tube. (SOF ¶¶ 116-123). But because the test centrifuge clogged up quickly after running the less viscous unconcentrated thin stillage through it, Mr. Barlage had not even attempted to run the concentrated thin stillage. (*Id.*). Mr. Barlage had also visited Agri-Energy on July 10, 2003 to perform a gyro test on thin stillage and concentrated thin stillage. But again, the gyro quickly and repeatedly clogged, requiring it to be disassembled and cleaned. (SOF ¶¶ 124-128). It was only during the in-plant testing in 2004, well after the critical date, that Plaintiffs were able to

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test their invention for its intended use and in its intended environment, which is to extract corn oil from concentrated thin stillage from the back-end of an operating ethanol plant. (SOF ¶¶ 104-106, 131, 151-155). That is when the inventors actually reduced the invention to practice. (*Id.*).¹⁰

Accordingly, there are genuine issues of material fact as to whether Plaintiffs' invention had been reduced to practice at the time of the July 31 letter. Summary judgment is thus inappropriate.

2. The Schematic and Other Documents Were Not Sufficiently Specific To Enable a Person Skilled in the Art To Practice the Invention

Certain drawings and descriptions relating to the invention had been prepared prior to the communications with Agri-Energy. (SOF ¶¶ 143-145, *See* Ex. 83, DX 112.) Defendants now claim that those drawings and descriptions show that the invention was ready for patenting before the critical date. (Master Docket No. ("MDN") 932, Defendants' Memorandum of Law In Support of Their Motion for Summary Judgment of Non-Infringement ("Defendants' Memo In Supp. Of MSJ") at 83-84). Whether those drawings made the invention ready for patenting, however, is a disputed fact issue. "To be 'ready for patenting' the inventor must be able to prepare a patent application, that is, to provide an enabling disclosure as required by 35 U.S.C. §

¹⁰ Defendants argue that the invention was ready for patenting in June of 2003 due to the presence of the small thin line of corn oil at the top of the test tube after the June 2003 bench test. (Def. Br. at pp. 82-83) That argument is inconsistent with how the industry conducts development and testing of a new method or apparatus. (SOF ¶¶ 131; Ex. 42, Ellis at 12:17-13:11, 30:16-31:13; Ex. 6, Van Gerpen Dep. at 131:6-133:4 (A small scale test "may not approximate the actual situation in an ethanol plant" but only indicates whether it's even "worth [the] time to investigate in a plant."; Ex. 24, Monceaux Dep. at 156-7; Ex. 27, Riley Dep. at 28:13-25 and 30:6-15.; *see also* Ex. 40, Vick Dep. at 30:22-33:25, 105:11-106:13; Ex. 79, DX 1253 at UWGP002711; Ex. 30, Copa Dep. at 27:22-36:20)

112.” *Space Sys./Loral, Inc. v. Lockheed Martin Corp.*, 271 F.3d 1076, 1080 (Fed. Cir. 2001). An invention is not ready for patenting at the moment of conception, particularly “when development and verification are needed in order to prepare a patent application that complies with § 112.” *Id.*

Here, the very evidence on which Defendants rely (Def Br. 83 citing SF 87, 94, 97-98, 103, 105-106) would support a jury verdict that further “development and verification” were needed before the invention was ready for patenting. (SOF ¶¶ 104-106, 113, 119-123, 131, 153-154) In the June 5, 2003 e-mail, Mr. Cantrell continued to question whether to “separate before or after the evaporator” – a key question that ultimately proved critical to the success of the patented method. (SOF ¶¶ 112-113, Ex. 64, DX 381). The June 29, 2003 e-mail likewise expresses a need for further testing. (SOF ¶¶ 106-107, 124-125, 132-133, 142, Ex. 65, DX 111).

Contrary to Defendants’ claim, the schematic does not enable a person skilled in the art to practice the invention and does not show that the invention was ready for patenting at that time. *See Pfaff v. Wells*, 525 U.S. at 66-68. For example, the schematic simply does not specify “where to place the module at Agri-Energy (after the evaporators but before the dryer).” (Defendants’ Memo In Supp. Of MSJ at 84; SOF ¶¶ 143-145) And, the schematic is simply devoid of any reference to an evaporator or a dryer. (SOF ¶¶ 143-145, Ex. 9, Dyer Dep. at 220:17 - 222:15)

The schematic also does not show that the input to the module was “syrup” or that the outputs of the module consisted of “syrup processed by centrifuge to produce oil, de-oiled syrup and solids.” (Defendants’ Memo In Supp. Of MSJ at 84.) The schematic does not use those terms. Rather, it only shows what is called “Incoming Product” that flows from a “Tank” to a centrifuge module. (SOF ¶¶ 143-145.) The schematic never identifies what the Incoming

Product is and it certainly does not identify it as concentrated thin stillage or “syrup” (*Id.*) In fact, Mr. Dyer, who created the figure said the Incoming Product could be ethanol. (*Id.*; Ex. 9, Dyer Dep. at 220:17 - 222:15).

The July 22 schematic sets out Cantrell’s and Winsness’s general concept as to what would be tested in the third and final step of their three step test plan set out by Cantrell on June 29, 2003, three weeks before the schematic was created. (SOF ¶¶ 132, *see also* SOF ¶¶ 105-106, 124-125, 143-145). Contemporaneous documents confirm that fact. (SOF ¶¶ 142, 148, 150-154, Ex. 70, DX 106, Ex. 67, DX 220, Ex. 94, DX 114). Moreover, the inventors testified repeatedly that in July/August 2003, they still needed to test the system in an ethanol plant to confirm that it would work for its intended purpose. (SOF ¶¶ 104-105, 113, 132-137; Ex. 55, Cantrell Vol. I Dep. at 138:9-13; Ex. 57, Cantrell Vol. V Dep. at 753:23-754:5). [REDACTED]

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[REDACTED]

Based on all that evidence, a jury could find that Cantrell and Winsness had not yet done the confirmatory testing needed to prepare an enabling patent disclosure.

These facts are similar to those before the Federal Circuit in the *Space Systems* case. The accused infringer in *Space Systems* argued that the inventor’s “drawings showed the essential principles of the invention, although in lesser detail than was later available and included in the patent application.” *Space Systems*, 271 F.3d at 1080. About one month before the critical date, the inventor “had legal conception of every element of every claim,” and sent a customer a proposal describing the “idea and how [the inventor] proposed to achieve it.” *Id.* Thus, unlike here, the proposal was actually sent to the third party before the critical date. *See Space Systems*, 271 F.3d at 1078. (SOF ¶¶ 137-140). The proposal included the “system’s four steps that are set

forth in the claim” at issue. *Id.* Yet the Federal Circuit reversed summary judgment of invalidity. Even though the inventor had conceived of each step in invention, the Federal Circuit found that more was needed for the invention to be “ready for patenting.” *Id.* While the invention was “eventually shown to be workable,” the inventors needed to test it further before they could create an enabling disclosure. *Id.*

Here too, the inventors conceived of an idea in 2003 to extract corn oil in an ethanol plant but they understood that more testing was required to demonstrate the workability or utility of the invention so they could prepare an enabling disclosure for the patent application. (SOF ¶¶ 104-106, 131, 152-154, *see also* SOF ¶¶ 36, 38-53) *See Honeywell*, 488 F.3d at 997_ (“An invention works for its intended purpose when there is a demonstration of the workability or utility of the claimed invention.”) Just as in *Space Systems*, even if the concept set out in the July 22, 2003 schematic was eventually shown to be workable during the 2004 in-plant testing at Agri-Energy, such a showing does not retroactively convert the concept in the schematic to one that was ready for patenting in July of 2003. *Id.* at 1080 (“The fact that a concept is eventually shown to be workable ***does not retrospectively convert the concept into one that was ‘ready for patenting’ at the time of conception.***” (emphasis added)). Whether the invention was ready for patenting in July 2003 is thus a question of fact that can only be resolved by a jury.

II. WHETHER THE PATENTS-IN-SUIT ARE ANTICIPATED BY PREVOST OR ROSTEN IS A DISPUTED QUESTION OF FACT

Defendants assert that two prior art references – U.S. Patent Application No. 2004/0087808 (“Prevost”) and U.S. Patent No. 2,615,029 (“Rosten”)—anticipate the patents-in-suit. To anticipate, a prior art reference must “disclose[] ***each and every*** element of a claimed invention.” *Silicon Graphics, Inc. v. ATI Tech., Inc.*, 607 F.3d 784, 796 (Fed. Cir. 2010) (emphasis added). The “[a]bsence from the” prior art reference “of ***any*** claimed element negates

anticipation.” *Minn. Min. & Mfg. Co. v. Johnson & Johnson Orthopeadics, Inc.*, 976 F.2d 1559, 1572 (Fed. Cir. 1992) (emphasis added). When, as here, a patent claims a range, a prior art patent that discloses a partially overlapping range does not anticipate. *Atofina v. Great Lakes Chem. Corp.*, 441 F.3d 991, 1000 (Fed. Cir. 2006).

Invalidity requires proof by clear and convincing evidence, *Microsoft Corp. v. i4i Ltd.*, 131 S. Ct. 2238, 2242 (2011), and “[w]hen the examiner considered the asserted prior art and basis for the validity challenge during patent prosecution, that burden becomes particularly heavy.” *Impax Labs. Inc. v. Aventis Pharms., Inc.*, 545 F.3d 1312, 1314 (Fed. Cir. 2008). Both Prevost and Rosten were considered by the PTO during the prosecution of each of the patents-in-suit, and the PTO issued the Patents anyway. Defendants thus face a heavy burden. Defendants fail to meet this burden, because their motion relies on incorrect statements of law and ignores fact issues that cannot be decided at summary judgment.

A. Fact Disputes Preclude a Summary Judgment Finding That Prevost Anticipates

Prevost does not anticipate any of the claims of the patents-in-suit. Most of the claims of the patents-in-suit require the step of evaporating the thin stillage to create a concentrate containing 30-90% moisture—or some subset of that range—by weight. *See e.g.* ‘484 Patent at claim 1¹¹. Claim 19 of Prevost, however, requires that the moisture content of the thin stillage be less than 15%. (SOF ¶60; Ex. 165, Prevost). Under black-letter anticipation law, Prevost does not anticipate the Patents.

Undeterred, Defendants argue that the 15% water disclosure is “an *obvious* typographical error” and should have said “15% fat.” Def Memo 91 (emphasis added). Defendants thus ask

¹¹ The ‘517 patent includes two claims requiring greater than 15% moisture by weight. (Ex. 21, ‘517 Patent, claims 1-2.)

this Court to re-write a prior art reference—not just altering its meaning, but giving it effectively *the opposite* meaning—to anticipate the patents-in-suit.¹² Defendants cite no case for this remarkably extreme position. They cite no case in which a court “corrects” a typographical error on a critical disclosure to anticipate a patent. And they have no authority for the even more extreme position that such a “correction” can give the reference the opposite meaning of what it initially said.

Indeed, Defendants’ position is contrary to the law. Altering a prior art reference to correct “errors,” even “obvious” ones, is antithetical to anticipation law, which requires “a clear and unambiguous teaching” of *every* claimed element. *Cheese Sys., Inc. v. Tetra Pak Cheese & Powder Sys., Inc.*, 725 F.3d 1341, 1352 (Fed. Cir. 2013) (affirming summary judgment of no anticipation); *see also App. of Hughes*, 345 F.2d 184, 188 (C.C.P.A. 1965) (“[A] reference in any event is good only for that which it clearly and definitely discloses.”). And while the doctrine of inherent anticipation may fill in “gaps” in prior art—adding elements that the reference does not explicitly disclose—the doctrine does not permit rewriting references. *Con. Can Co. USA, Inc. v. Monsanto Co.*, 948 F.2d 1264, 1268 (Fed. Cir. 1991) (Inherent anticipation requires that “the reference is silent about the asserted inherent characteristic.”); *Cal. Med. Prods., Inc. v. Tecnol Med. Prods., Inc.*, 921 F. Supp. 1219, 1250 (D. Del. 1995) (rejecting anticipation argument when prior art reference contained “a specific . . . disclosure which [the Defendant] wishes to replace with a separate . . . disclosure”). Prevost does not clearly and unambiguously teach mechanically processing thin stillage in the claimed moisture ranges, and the law does not permit re-writing it to add this teaching.

¹² Defendants relied heavily upon claim 19 of Prevost during the Markman phase of this case, but never suggested it included a typographical error that fundamentally changes the meaning of the claim.

Even if the law permitted re-writing prior art, fact disputes preclude summary judgment here. “What a reference discloses is a question of fact.” *Ortho-McNeil Pharm., Inc. v. Teva Pharms. Indus., Ltd.*, 344 Fed. Appx. 595, 600 (Fed. Cir. 2009); *Con. Can*, 948 F.2d at 1269 (reversing summary judgment of anticipation because of fact disputes about what reference inherently disclosed). Whether Prevost’s claimed moisture range includes an error is, at best, sharply contested.

Prevost repeatedly refers to extracting oil from a product that contains 15% water. (SOF ¶¶ 64; Ex. 165, Prevost at ¶¶ 12, 15-16, 31, 33-35, and 38). Dr. Eckhoff testified that a person or ordinary skill would understand from these repeated references that Prevost disclosed extracting oil from a product with 15% water, and perhaps thought this the optimal condition for oil extraction. (SOF ¶ 62; Ex. 1, Eckhoff Van Gerpen Rep. at ¶¶ 112, 115). That conclusion finds further support in the Prevost application’s reference to a stream in which its “water content is less than about 15%.” (SOF ¶60; Ex. 165, Prevost at Claim 8). It is also confirmed by Prevost’s filing of another application containing a claim element of “a syrup having a water content of 15% wt. % or less.” (SOF ¶66; Ex. 2, ‘547 Application at Claim 1). Together these facts strongly suggest that there is no error in Claim 19, and at the very least create a fact dispute that a jury must resolve.

Defendants nonetheless argue that a person of ordinary skill would understand that Prevost had intended to refer to 15% fat, because a product consisting of 15% water could not pass through a centrifuge. (Defendants’ Memo In Supp. Of MSJ at 92.) However, Prevost’s specification also describes passing DDGS, which contain approximately 10% water by weight, through a centrifuge. (SOF ¶60; Ex. __, Prevost at ¶13). Claim 19’s requirement that the 15% water product pass through a centrifuge is thus fully consistent with the Prevost specification.

And even if the claimed method of centrifuging a 15% water product would not effectively work in practice, a person of ordinary skill would understand Prevost to have disclosed that method and nothing more. (SOF ¶64; Ex. 1, Eckhoff Van Gerpen Rep. ¶ 115.) The fact that the unit of measure that the patentee indicated is not the most conventional or convenient is of limited significance. Claims mean precisely what they say. *Cf. Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed.Cir.2005) (*en banc*).

Defendants assert that “one of skill in the art would read Prevost to clearly disclose recovering oil by centrifuging syrup containing less than 15 wt. % fats.” (Defendants’ Memo In Supp. Of MSJ at 92.) But their own experts were not prepared to jump to such conclusions. Professor Reilly testified that Prevost meant to say “40-55%” moisture, rather than 15%, but he found it “hard to tell” and did not “want to read Mr. Prevost’s mind.” (SOF ¶ 68; Ex. Reilly, 148:2-25.) Professor Harris would correct the claim to say “30, 40 percent water perhaps,” although he conceded that he was making “[j]ust an educated guess.” (SOF ¶68; Ex. 4, Harris Dep. 118:22, 119:8-11). Professor Yancey acknowledged that attempting to reinterpret the paragraph is “conjecture.” (SOF ¶ 68; Ex. 5, Yancey Dep., p 128:13.) Although Professor Van Gerpen testified that he interpreted Claim 19 to cover 15% fat and not water, even he qualified his interpretation as a “guess” and acknowledged that “there’s an infinite number of other options.” (SOF ¶ 68; Ex. 6, Van Gerpen Dep. 144:18-24.) Anticipation requires “a clear and unambiguous teaching.” *Cheese Sys., Inc.* 725 F.3d at 1352. But as this conflicting testimony from Defendants’ experts demonstrate, the meaning of Prevost’s Claim 19 is hardly clear to a person of ordinary skill.

In a last gasp, Defendants paid \$2,000 to Prevost’s co-inventor, Neal Hammond, to sign a declaration in which he opines that Claim 19 should have said “fat” and not “water.” (SOF

¶ 70.) Hammond’s declaration has no legal significance: Anticipation focuses on a person of ordinary skill’s interpretation of a claim; the subjective intent of an inventor is irrelevant. *Cf. Superior Fireplace Co. v. Majestic Products Co.*, 270 F.3d 1358, 1372 (Fed. Cir. 2001) (holding in the claim construction context that subjective intent of an inventor “is of little or no probative weight in determining the scope of a claim”). Even if it were relevant, Hammond’s testimony is of limited value.¹³

As Defendants concede, Prevost does not explicitly disclose the pH and temperature ranges of the syrup found in claim 8 of the ‘858 Patent, in all claims of the ‘516 Patent, in claims 5 and 6 of the ‘517 Patent, and in claim 30 of the ‘484 patent. (Defendants’ Memo In Supp. Of MSJ at 92-93.) Instead Defendants assert that these missing disclosures are inherent in Prevost. (Defendants’ Memo In Supp. Of MSJ at 92-93.) Inherent anticipation, however, requires that the “prior art *necessarily* functions in accordance with, or includes, the claimed limitations.” *Bettcher Indus., Inc. v. Bunzl USA, Inc.*, 661 F.3d 629, 639-40 (Fed. Cir. 2011) (affirming denial of JMOL when argument for inherent anticipation hinged “hypothetical circumstances” of prior art structure serving a function not disclosed in the prior art). Inherency “may not be established by probabilities or possibilities,” the missing functions must inevitably occur when practicing the prior art reference. *Id.* Defendants offer no proof that the Prevost process would inevitably be performed at the claimed pH and temperature ranges, other than to argue that these ranges are “standard conditions” in a “conventional dry milling plant.” (Defendants’ Memo In Supp. Of

¹³ It is worth nothing that, as Hammond acknowledged, Prevost was the inventor of the claims involving less than 20% water and was the primary contact with the patent attorney. (SOF ¶ 70; Ex. 26, Hammond Dep. at 31:14-16; 306:17-19). Moreover, Hammond had not spoken to Prevost about the meaning of these claims. (*Id.* 27:23-25, 30:6-8).

MSJ at 92.) Yet Defendants point to no evidence that Prevost's method must be performed in a conventional dry milling plant under standard conditions. Defendants thus cannot meet their burden to show that the pH and temperature ranges would "inevitably" result from Prevost.

Defendants also acknowledge that Prevost does not disclose heating the syrup after it exits the evaporator, as required by claims 8-9 and 19-26 of the '484 Patent. (Defendants' Memo In Supp. Of MSJ at 93.) Again Defendants assert that this step is inherent in Prevost. The patents-in-suit, Defendants reason, do not disclose a device to heat the syrup. *Id.* So if the patents-in-suit are found to adequately describe a heating device under § 112, then a heating step must be inherent in Prevost. *Id.* Defendants' logic is faulty. Anticipation asks whether a heating step is inherent in Prevost; it is not, because one could perform Prevost's method without a separate heating step. Written description asks whether a person of ordinary skill would, after reading the specification, understand that the inventors possessed a process with a separate heating step; he would, for the reasons explained later in this brief.

B. Rosten does not anticipate

Rosten also does not anticipate any of the claims of the patents-in-suit, because it fails to disclose several elements of the claimed methods.¹⁴ Rosten, like Prevost, was considered by the patent office during the prosecution of the patents-in-suit. Indeed, its process differs from that in the patents-in-suit in at least three ways.

¹⁴ Rosten is essentially the same process described in the background of the patents-in-suit that discloses centrifugation of thin stillage to recover an undesirable oil/water emulsion requiring further processing to obtain oil. (SOF ¶¶ 9, 13-14, Ex. 19, '858 Patent, col. 1, l. 25-col. 2: l. 15; SOF ¶¶ 54-57, Ex. 1, Eckhoff Van Gerpen Rep. ¶124) And it was essentially the same process recommended for further testing by Barlage as part of his June 2003 bench test report. (SOF ¶¶ 120-121)

First, Rosten extracts corn oil from a different point in the manufacturing process. The patents-in-suit claim the novel idea of extracting oil from concentrated thin stillage, a complex mix of oil, water, and solids. (SOF ¶¶ 6-10, 14, Ex. 1, Eckhoff Van Gerpen Rpt ¶¶ 41, 27, 129-130; '848 Patent 2:59, 4:28-34). The method described in the patents-in-suit involves, *inter alia*, concentrating the thin stillage and then mechanically processing it to remove oil. (SOF ¶¶ 6-10, 14, '848 Patent 6:1-8). Rosten, in contrast, describes a byproduct called “thin slop” that is made by screening of the bottoms from the fermentation and distillation of a cereal containing mash to remove solids. (SOF ¶¶ 57-58, Ex. 41, Rosten 1:44-50). Rosten then runs the thin slop through a first centrifuge to produce an oil/water emulsion. (*Id.* at 1:44-50, 2:13-33 & Fig 1). Unlike the method in the patents-in-suit, which extract oil from concentrated thin stillage including the solids, the oil/water emulsion stream from which Rosten extracts oil does not contain solids, and is not concentrated thin stillage. Indeed, Rosten discloses feeding the remaining intermediate thin slop stream – not the oil/water emulsion, through an evaporator “and thence to solid consistency on a drum dryer, for sale as poultry feed.” (SOF ¶¶ 54-57; Ex. 41, Rosten 2:28-33; 2:50-3:3). Rosten thus recommends using the evaporated thin stillage to produce solid feed for chickens, not for extracting corn oil. That latter use was pioneered by the patents-in-suit.

Second, Rosten's thin slop is not evaporated or concentrated before it is fed to the first centrifuge to produce an oil/water emulsion, (*Id.* 1:44-50) and Rosten does not evaporate the oil/water emulsion that results from the first centrifuge. (*Id.* 2; 43-48 & Fig 1; SOF ¶¶ 55-56; Ex. 1, Eckhoff Van Gerpen Rpt ¶¶ 41, 127, 129-130). Instead, Rosten sends the oil/water emulsion through a second centrifuge to extract the oil. (*Id.* 2: 43-48)]. The patents-in-suit, by contrast, evaporate thin stillage to concentrate it and then require just one centrifuge to recover oil.

Third, Rosten does not disclose the moisture content, temperature, and pH ranges claimed in the patents-in-suit. (SOF ¶¶ 59) Though Defendants say that these properties are inherent in Rosten, they are not, for the reasons addressed in Plaintiffs' Statement of Material Facts in Dispute, Section IV above.

Defendants' experts do not claim that Rosten anticipates the patents-in-suit. Instead, Defendants' entire argument that Rosten anticipates is based on a misstatement by Dr. Eckhoff. Br. 11. Because Dr. Eckhoff referred to the oil/water emulsion as "thin stillage" during his deposition, Defendants assert that Rosten discloses using a centrifuge to separate oil from concentrated thin stillage. Br. 96. But this assertion is incorrect for at least two reasons: (i) it is plain that the oil/water emulsion is not thin stillage and lacks solids, (SOF¶¶ 55, 57, Ex. 1, Eckhoff Van Gerpen Rpt ¶¶ 41, 127, 129-130; '848 Patent 2:59, 4:28-34), and (ii) Dr. Eckhoff corrected his misstatement later in his deposition, stating that the output from the first centrifuge step in Rosten does not produce thin stillage:

- Q. Okay. Do you have an understanding of what is going into that centrifuge?
- A. Thin stillage.
- Q. Okay. And are there any concentrated thin stillage streams coming out of that centrifuge?
- A. No.

(SOF ¶¶ 55, 57 Ex. 8, Eckhoff Dep. at 730:22-731:2). Whether or not Rosten anticipates the patents-in-suit therefore remains a sharply disputed fact issue.

III. THE PATENTS-IN-SUIT ARE NOT INVALID AS OBVIOUS

Plaintiffs developed and patented a novel process of corn oil extraction that allowed ethanol plants to extract corn oil in an unexpectedly efficient manner. That innovation was quickly seized upon by the market, as the vast majority of ethanol plants in the country have already adopted the widely acclaimed technology. Defendants ignore these critical secondary

indicia of non-obviousness and use hindsight to stitch together unrelated prior art. Much of this prior art bears little relation to the ethanol industry. The references that do relate to agro-industry *teach away* from Plaintiffs' innovation of evaporating thin stillage prior to processing it. And, most tellingly, many of the references are decades old—some date back to the 1950's. Were the invention as obvious as Defendants say, someone would have achieved it in the intervening decades. But prior to Mr. Cantrell and Mr. Winsness, no one did.

Defendants' answer is that it was not profitable to extract corn oil until recently. But this is just one of many disputed facts that cannot be resolved on summary judgment. Plaintiffs' evidence shows that extracting corn oil has been profitable for decades. Defendants may disagree, but a jury, not this Court, must decide who is right.

Obviousness is a conclusion of law based on a number of underlying factual inquiries. *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1572 (Fed. Cir. 1988). The four primary factual inquiries are: (1) the scope and content of the prior art; (2) the differences between the prior art and the claims at issue; (3) the level of ordinary skill in the art; and (4) objective evidence bearing on obviousness – *i.e.* secondary considerations of non-obviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966); *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007) (same).

Secondary considerations of non-obviousness include evidence that the invention enjoyed commercial success, that it received praise within the industry, that it addressed a long felt but unsolved need, or that it met with unexpected results. *Graham*, 383 U.S. at 17-18. Importantly, the “consideration of the objective indicia [-- or secondary considerations--] is part of the whole obviousness analysis, not just an afterthought.” *Leo Pharm. Products, Ltd. v. Rea*, No. 12-1520, 2013 WL 4054937, at *11-12 (Fed. Cir. Aug. 12, 2013). Indeed, such considerations “can

establish that an invention appearing to have been obvious in light of the prior art was not and *may be the most probative and cogent evidence in the record.*” *Apple Inc. v. Int’l Trade Comm’n*, 725 F.3d 1356, 2013 WL 4007535, at *7 (Fed. Cir. 2013) (*quoting Transocean Offshore Deepwater Drilling, Inc. v. Maersk Drilling USA, Inc.*, 699 F.3d 1340, 1349 (Fed. Cir. 2012)) (internal quotation marks omitted) (emphasis added). “This evidence guards against the use of hindsight because it helps ‘turn back the clock and place the claims in the context that led to their invention.’” *Apple*, 2013 WL 4007535 at *7 (quoting *Mintz v. Dietz & Watson, Inc.*, 679 F.3d 1372, 1379 (Fed.Cir.2012)).

“An issued patent enjoys a presumption of validity.” *Impax Labs., Inc. v. Aventis Pharms., Inc.*, 545 F.3d 1312, 1314 (Fed. Cir. 2008). “Thus, a party challenging patent validity has the burden to prove its case with clear and convincing evidence. When the examiner considered the asserted prior art and basis for the validity challenge during patent prosecution, that burden becomes particularly heavy.” *Id.*, citing *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1467 (Fed. Cir. 1990).

A. There Are Genuine Issues Of Material Fact As To Whether The Patents-in-Suit Claim An Obvious Combination Of Known Elements

Defendants argue that summary judgment of obviousness is proper here because “[t]he claimed invention is no more than a combination of old elements . . . with no change to them or in their respective functions.” Def. Memo 98. Defendants’ argument is wrong both as a matter of law and as a matter of fact. The Supreme Court has expressly criticized the approach embraced by Defendants. “[A] patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the art.” *KSR*, 550 U.S. at 406. Indeed, such an approach would inevitably lead to hindsight bias and *ex post facto* findings of obviousness, both of which have been rejected by the Federal Circuit. *St Jude*

Medical, Inc. v. Access Closure, Inc., 2013 WL 4826148, *9 (Fed. Cir. 2013); *see also Cheese Systems, Inc. v. Tetra Pak Cheese and Powder Systems, Inc.*, 2013 WL 3984991, at *9 (Fed. Cir. 2013) (“Among the difficult challenges of applying the doctrine of obviousness is avoidance of even a hint of hindsight. Obviousness ‘cannot be based on the hindsight combination of components selectively culled from the prior art to fit the parameters of the patented invention.’”).

Defendant’s argument is also unsupported by the facts. Far from being a mere combination of known elements into a system offering predictable results, Plaintiffs’ invention was a counterintuitive solution to a long-existing problem, one that overcame several significant obstacles to reach previously unheard efficiency in the extraction of corn oil. Summary judgment is therefore not appropriate here.

1. Plaintiffs Showed That Concentrated Thin Stillage Having Increased Viscosity Actually Improved Corn Oil Extraction

A person of ordinary skill in the art at the time of the invention would have known that others had attempted to recover oil from thin stillage, but that the technology was not successful and had not been adopted by the industry. (SOF ¶¶ 167-170). That understanding would have been based in part on the knowledge that concentrated syrup – i.e. thin stillage that has gone through an evaporation step – can be 100 times more viscous than thin stillage. (SOF ¶¶ 44-52, Ex. 15, Rockstraw Dep. at 101:6-10.) A person of ordinary skill in the art would have concluded that increasing the viscosity would have made separation of corn oil by centrifugation very difficult. (SOF ¶¶ 44-52.) Indeed, at least one of Defendants’ experts agreed that one would have predicted the centrifugation of corn oil from concentrated syrup to be at least ten times slower than separation of oil from thin stillage. (SOF ¶¶ 44-52) This conclusion was buttressed by the internal documentation of defendant GEA Mechanical Equipment US, Inc., which noted

than when concentrating whey to a moisture content of 75% or less, “the viscosity of the whey concentrate rises sharply[, which] negatively affects the separability.” (SOF ¶¶ 44-52.)

Plaintiffs’ invention therefore ran counter to conventional wisdom at the time of the invention. It suggested increasing the viscosity of the stillage prior to centrifugation – a step that a person of ordinary skill in the art would have thought to make oil separation more difficult – to help dramatically improve the efficiency of oil recovery through centrifugation.

2. Plaintiffs Identified The Most Efficient Location From Which To Recover Oil

Defendants argue that there was little inventiveness in Plaintiffs’ suggestion to perform centrifugation on concentrated syrup after the evaporation step, and claim that a person of ordinary skill in the art would necessarily have performed the centrifugation at that point in the process. Def. Memo pp. 97. 103-104 . Defendants’ argument is belied by the record.

As a threshold matter, Defendants’ argument is undermined by one of the prior art references on which it relies most heavily – the Prevost application. Prevost discloses four potential post-fermentation streams: two on the wet distillers grain side (16A and 24A) and two on the thin stillage stream side (17A and 20A). (SOF ¶ 60).

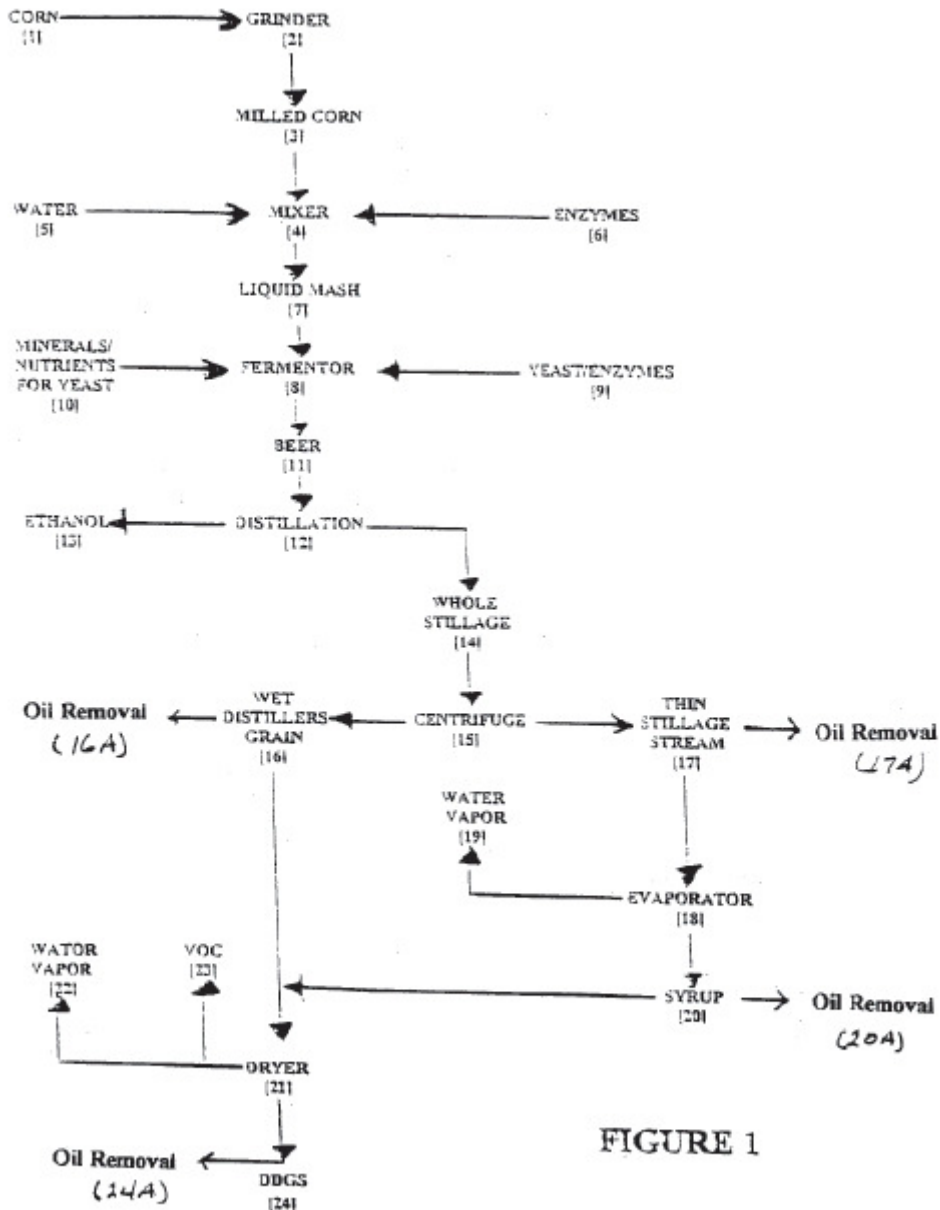


FIGURE 1

Importantly, Prevost also specifically identifies a number of different points in the ethanol manufacturing process from which a person of ordinary skill in the art could seek to extract corn oil, including: (a) the milled corn (3); (b) the liquid mash (7); (c) the beer (11) leaving the fermenter (8); or (d) the whole stillage (14). A person of ordinary skill in the art would therefore have had to choose between numerous different corn oil extraction points.

REDACTED

[REDACTED]

Dr. Eckhoff went so far as to explain that, at the time of the invention, he would have been skeptical that recovery of oil from post-fermentation streams was possible. (SOF ¶ 44, 168 Ex. 8, Eckhoff Dep. at 61:15-18 (“[W]e were working with the front end. We didn’t believe that it was practical to do it from the back end, and I still don’t.”)). Plaintiffs’ solution to the problem of corn oil extraction in an ethanol plant was therefore not preordained, was one of several potential solutions they could have adopted, was one that a person of ordinary skill in the art would not necessarily have chosen, and is one that yielded tremendous results. (SOF ¶¶ 30-52, 168).

3. Plaintiffs Identified Centrifugation As The Best Corn Oil Extraction Mechanism

Defendants claim that Plaintiffs’ combination of elements “yields the predictable and unremarkable result of separating a stream that is largely or mostly oil from a syrup that was . . . known to have separable oil.” (Defendants’ Memo In Supp. Of MSJ at 98.) The record, however, shows that Plaintiffs’ results could not have been predicted with any certainty.

First, a person of ordinary skill in the art at the time of the invention would have had to choose centrifugation among several possible separation technologies, none of which would have

been known to lead to predictable results. (SOF ¶¶ 30-42, 168.) [REDACTED]

[REDACTED] SOF ¶ 36; Ex. 8, Eckhoff Dep.at 81:2-7; 104:20-22; 146:15-21; 404:2-4 (testifying that an inventor would want to perform full-scale in-plant tests to determine whether it would work because there are a lot of differences between bench top testing and in-plant testing)).

Second, separation techniques involving centrifugation are particularly unpredictable because they can either lead to emulsions, or help break them down. Emulsions increase the complexity of the system because they can preclude separation. (SOF ¶¶ 40-43; [REDACTED]

REDACTED

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] The results Plaintiffs obtained by choosing centrifugation as a separation mechanism would not therefore have been predictable to a person of ordinary skill in the art.

4. Plaintiffs Extracted Corn Oil From A Mix Containing Solids

It would also have been very difficult to predict the effectiveness of Plaintiffs' invention because of the presence of solids in the concentrated thin stillage. Oil binds tightly to the solids present in the thin stillage stream. (SOF¶ 50-51). The force of the bond between the oil and solids can be stronger than the centrifugal force trying to separate the oil from the solids. (SOF¶ 51; Ex. 42, Ellis Dep.41:8-10). The higher the solid content in the thin stillage stream, the more likely the solids are to trap the oil and lower the oil extraction yield. (*Id.*; [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

B. Defendants Completely Ignore Secondary Considerations Of Non-Obviousness

To properly analyze the non-obviousness of Plaintiffs' invention, this Court must assess the so-called secondary considerations of non-obviousness. "As a safeguard against 'slipping

into use of hindsight and to resist the temptation to read into the prior art the teachings of the invention in issue,” the Federal Circuit has “required courts to consider evidence of the objective indicia of nonobviousness prior to making the ultimate determination of whether an invention is obvious.” *Plantronics, Inc. v. Aliph, Inc.*, 724 F.3d 1343, 1354-55 (Fed. Cir. 2013) (citing *Graham*, 383 U.S. at 36). “Secondary considerations evidence can establish that an invention appearing to have been obvious in light of the prior art was not and may be the most probative and cogent evidence in the record.” *Apple Inc. v. Int’l Trade Comm’n*, 725 F.3d 1356, 2013 WL 4007535, at *7 (Fed. Cir. 2013) (quoting *Transocean Offshore Deepwater Drilling, Inc. v. Maersk Drilling USA, Inc.*, 699 F.3d 1340, 1349 (Fed. Cir. 2012)) (internal quotation marks omitted). The Federal Circuit has recently emphasized that “consideration of the objective indicia is part of the whole obviousness analysis, not just an afterthought,” and that the “objective indicia -- taken in sum -- are the most probative evidence of nonobviousness . . . enabling the court to avert the trap of hindsight.” *Leo Pharm. Products, Ltd. v. Rea*, 2012-1520, 2013 WL 4054937, at *11-12 (Fed. Cir. Aug. 12, 2013) (finding invention to be non-obvious on the basis of strong evidence of secondary considerations despite prior art that otherwise supported a ruling of obviousness). In addressing such secondary considerations, a patent holder must demonstrate a “nexus between the merits of the claimed invention” and the “evidence of secondary considerations.” *Muniauction, Inc. v. Thomson Corp.*, 532 F.3d 1318, 1327 (Fed.Cir.2008) (quoting *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 668 (Fed.Cir.2000)).

Defendants’ motion for summary judgment of invalidity fails entirely to address secondary considerations of obviousness. It is therefore deficient under the Federal Circuit’s precedent. Defendants’ decision not to address such considerations is understandable, as all applicable indicia point towards the non-obviousness of Defendants’ patents.

1. Plaintiffs' Invention Has Enjoyed Enormous Commercial Success

Evidence that a patented invention has generally been adopted in an industry and has enjoyed general commercial success is “very weighty evidence” sustaining the presumption that the relevant patent is valid. *Eibel Process Co. v. Minnesota & Ontario Paper Co.*, 261 U.S. 45 (1923). Here, that presumption finds support in the widespread use of Plaintiffs’ corn oil extraction technology in the vast majority of ethanol plants, and in the fact that no non-infringing system is being used anywhere in the country to extract distillers corn oil.

Plaintiffs do not own an ethanol plant, but have commercialized the patented process by installing systems, providing know-how, and licensing their technology to ethanol plants. (SOF ¶¶ 195-197) [REDACTED]

[REDACTED] While corn oil extraction represents only one part of Plaintiffs’ activities in the agro-industry field, it has been a very successful business for Plaintiffs and one that they continue to try to grow. (SOF ¶¶ 1-8, *see also*, SOF ¶¶ 87-93).

But non-licensees have also made extensive use of Plaintiffs’ technology. (SOF ¶¶ 190; *see also* ¶ 182). Indeed, the inventors sold their first systems as part of an exclusive marketing agreement to ICM, who quickly recognized the value of the technology, and along with GEA actively promoted the unauthorized use of the technology in plants around the country. (SOF ¶¶ 183-188, *see also* SOF ¶¶ 165, 174.) According to industry reports, there were 211 ethanol plants in the United States as of February 2013, 55 to 70% of which were extracting corn oil. (SOF ¶¶ 166, 182, 190)

These infringing uses have been extremely lucrative for Defendants and others – each of the Defendant ethanol plants have made millions of dollars selling the corn oil recovered by their

infringing systems. (SOF ¶¶ 188-189.) And GEA, ICM, and Flottweg have also made millions by encouraging others to infringe the patents-in-suit, and by providing them with the necessary equipment and expertise in order to do so. (SOF ¶¶ 183-189.)

2. Plaintiffs' Invention Has Been Praised Within The Industry

Plaintiffs' invention here was very well received in the industry, and earned plaudits from many of the biggest players in the market – including some of the Defendants in this suit. ■■■■■

REDACTED

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Finally, on February 3, 2010, the U.S. Environmental Protection Agency issued a Renewable Fuel Standard Program (RFS2) Regulatory Impact Analysis. (SOF¶ 202.) Among other things, the document highlighted the key role that corn oil separation was expected to play in the evolution of the U.S. renewable fuels industry, and designated Plaintiffs' corn oil system as an "advanced technology" that could help ethanol plants meet the EPA's requirement of a 20% reduction in greenhouse gas emissions. (*Id.*)

3. Plaintiffs' Invention Addressed A Long Felt but Unsolved Need

Evidence that the invention disclosed in a patent was able to address a long-felt need in the industry – one that had not until then been met by other industry players – is objective evidence of the non-obviousness of that patent. *WMS Gaming, Inc. v. Int'l Game Technology*, 184 F.3d 1339, 1360 (Fed. Cir. 1999). Defendants readily admit that the ethanol industry had known at least since the 1950's that valuable corn oil was trapped in the by-products of ethanol production. (SOF ¶¶ 171-176; Defendants' Memo In Supp. Of MSJ at ¶ 35.) And a viable market for this oil has existed for decades as an animal feed additive or yellow grease substitute. (SOF ¶¶ 173-174.) Yet attempts at separating the oil from the thin stillage before an evaporation stage – as illustrated in some of the decades-old prior art identified by Defendants – had never caught on. (SOF ¶¶ 13, 17, 20, 27-29, 53-70, 167, 169, 190.) It was only upon the introduction of Plaintiffs' technology years later that corn oil extraction became widely adopted – a strong indicator of non-obviousness. *Leo Pharmaceutical Products, Ltd. v. Rea*, 2013 WL 4054937, *12 (Fed. Cir. 2013) (The length of the intervening time between the publication dates of the prior art and the claimed invention – 14 years – served as an objective indicator of long-felt but unsolved need).

4. Plaintiffs' Invention Succeeded Where Others Had Failed

“Nonobviousness is suggested by the failure of others to find a solution to the problem which the patents in question purport to solve. Such evidence shows indirectly the presence of a significant defect in the prior art, while serving as a simulated laboratory test of the obviousness of the solution to a skilled artisan.” *Symbol Technologies, Inc. v. Opticon, Inc.*, 935 F.2d 1569 (Fed. Cir. 1991). That objective indicium weighs heavily in favor of non-obviousness here.

REDACTED

REDACTED

REDACTED

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] Finally, Dr. Eckhoff testified that he and many others in the industry felt that it was not possible to separate sufficient quantities of oil from ethanol plant streams because in his experience “a little bit of oil” would rise to the top of the fermenter, but “there was a lot of oil that never rose up to the top.” (SOF ¶¶ 45, 168, Ex. 8, Eckhoff Dep., 61:2-9. Over the years he and his research colleagues had attempted to develop oil extraction systems for corn germs focused on the front end of ethanol plants, but their systems were never successful and were never adopted by the industry. *Id.* at 493:21-22, 495:13-21, 497:6-8, 503:2-8; SOF ¶¶ 166-168; Ex. 1, Eckhoff Van Gerpen Rep., ¶¶ 14-15.)¹⁵

This evidence of failure of others weighs heavily in favor of non-obviousness of

[REDACTED]

Plaintiffs' patents, particularly since many of the past failures were endured by Defendants now challenging Plaintiffs' patents. *Heidelberger Druckmaschinen AG v. Hantscho Commercial Products, Inc.*, 21 F.3d 1068, 1072 (Fed. Cir. 1994) ("[I]tigation argument that an innovation is really quite ordinary carries diminished weight when offered by those who had tried and failed to solve the same problem, and then promptly adopted the solution that they are now denigrating.").¹⁶

5. Plaintiffs' Invention Yielded Unexpected Results

As the Supreme Court has recognized, even if all the elements of an invention are known in the prior art, combining them may be shown to be non-obvious when the invention yields unexpectedly positive results. *U.S. v. Adams*, 383 U.S. 39, 51-52 (1966). That is very much the case here.

At the time of the invention, it was entirely unexpected for a back-end oil recovery system like Plaintiffs' corn oil recovery system to work successfully. Prior efforts to separate corn oil from thin stillage had failed and, as noted above, it was counterintuitive for anyone to attempt corn oil extraction after evaporation of the thin stillage into viscous syrup. (SOF ¶¶ 13, 37-53, 167-170). [REDACTED]

[REDACTED]

[REDACTED] A person of ordinary

¹⁶ Defendants also rely on Mr. Winsness' statement in 2005 that "if the little gyro tester works then the large machines definitely work" to support their obviousness argument. (Defendants' Memo In Supp. Of MSJ at ¶ 96; Defendants' SJ-Ex. K.) But Mr. Winsness' statement was made long after the first successful testing in 2004. (SOF ¶ 152) And the email actually shows that the ethanol plant was pessimistic that the process would work. Mr. Winsness' full statement read: "[b]asically, if the little gyro tester works then the large machines definitely work – However, to increase [your] comfort level, a trial would be the best approach." (*Id.*)

skill in the art at the time of the invention would not therefore have expected the evaporation and centrifugation of thin stillage to be a successful method of recovering oil. (SOF ¶¶ 37-53.) That Plaintiffs' system went on to prove otherwise was entirely unexpected, and confirms that the related patents are non-obvious.

6. There Is An Established Nexus Between Plaintiffs' Invention And The Secondary Considerations Of Non-Obviousness

“When a patentee asserts that commercial success supports its contention of nonobviousness, there must . . . be a sufficient relationship between the commercial success and the patented invention. . . . The burden of proof as to this connection or nexus resides with the patentee.” *Demaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 1392 -1393 (Fed. Cir. 1988). In meeting its burden of proof, the patentee in the first instance bears the burden of coming forward with evidence sufficient to constitute a prima facie case of the requisite nexus. *Id.*, citing *Texas Dept. of Community Affairs v. Burdine*, 450 U.S. 248, 254 n. 7 (1981). “When the patentee has presented a prima facie case of nexus, the burden of coming forward with evidence in rebuttal shifts to the challenger, as in any civil litigation.” *Demaco*, 851 F.2d at 1393. “It is th[en] the task of the challenger to adduce evidence to show that the commercial success was due to extraneous factors other than the patented invention, such as advertising, superior workmanship, etc.” *Id.* Importantly, the Federal Circuit has recognized that a patent holder's lack of previous experience in the market coupled with its high sales of patented product provided an inference of a nexus between its commercial success and the patented invention. *Pro Mold and Tool Co., Inc. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1574 (Fed. Cir. 1996). That inference is appropriate here.

As noted above, the technology embodying the patents-in-suit has been extraordinarily commercially successful, has been implemented by as much as 70% of the industry, and has

earned each of the plant defendants millions of dollars a year. (SOF ¶¶ 189-190.) That commercial success has been driven by the high recovery yields that Plaintiffs' technology allows ethanol plants to achieve. (SOF ¶¶ 3, 20, 25, 189-190, 198-202). [REDACTED]

[REDACTED] as well as the inventors of the patents-in-suit, have agreed that centrifugation of syrup is the only process that dry mill ethanol plants currently utilize to recover corn oil from their by-products. (SOF ¶20; Ex. 18, Winsness Decl. at ¶ 30). Under the circumstances, there is strong evidence of a nexus between Plaintiffs' invention and the commercial success of Defendants' corn oil extraction systems.

In the face of this overwhelming evidence of a nexus, Defendants nonetheless maintain that there is none. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[illegible]

32037
REDACTED

[REDACTED]

[REDACTED]

- [REDACTED]

[REDACTED]

[REDACTED]

- [REDACTED]

[REDACTED]

- [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

e.g., Pro-Mold and Tool Co., Inc. v. Great Lakes Plastics, Inc., 75 F.3d 1568, 1574, 37 U.S.P.Q.2d 1626 (Fed. Cir. 1996) (affidavits regarding alleged commercial success created genuine issues of material fact); *Continental Can Co. USA, Inc. v. Monsanto Co.*, 948 F.2d 1264, 1274, 20 U.S.P.Q.2d 1746 (Fed. Cir. 1991) (vacating summary judgment of invalidity for obviousness because disputed fact issues existed regarding secondary considerations, including commercial success).

C. There Are Genuine Issues Of Material Fact As To Whether Defendants' Individual Prior Art References Show Plaintiffs' Patents To Be Obvious

Defendants identify a slew of prior art references that they claim render obvious, alone or in combination, the patents-in-suit. As a threshold matter, almost all of the cited references were brought to the attention of the examiner during prosecution of all of the patents-in-suit, and the Defendants' invalidity contentions raising their invalidity arguments- including those based upon the prior art cited in their brief- were of record during the prosecution of the '516, '517 and '484 patents. Moreover, Plaintiffs' facts show that Defendants' prior art teaches away from plaintiffs' innovation, fails to offer any motivation to combine the prior art references, and in many cases concern fields of industry – such as animal oil extraction -- that have no bearing on the world of ethanol production.

The Supreme Court has held that “a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the art.... This is so because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.” *KSR Int'l. Co. v. Teleflex Inc.*, 550 U.S. at 419-20. The Court further stated that “[r]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to

support the legal conclusion of obviousness.” *Id.* at 419 (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)). However, “the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *Id.* Although not mandatory, the Court agreed that the teaching-suggestion-motivation test (“TSM test”) captured a helpful insight to prevent hindsight bias. *Id.* There is no suggestion to combine if a reference teaches away from its combination with another source.

A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant
....

Tec Air, Inc. v. Denso Mfg. Michigan, Inc., 192 F.3d 1353, 1360 (Fed. Cir. 1999).

The obviousness inquiry also requires consideration of common knowledge and common sense. *Id.* at 420-21. To find obviousness, Defendants must “identify a reason that would have prompted a person of ordinary skill in the art in the relevant field to combine the elements in the way the claimed new invention does.” *Id.* Defendants have failed to meet that burden here.

1. The Rosten Reference

The Rosten reference puts the person of ordinary skill on an entirely different path--or more properly in this case, a different stream in the ethanol manufacturing process. Rosten does not teach recovering of oil from concentrated thin stillage. (SOF ¶¶54-58.) Instead, it recommends centrifuging the thin stillage itself to create an oil-water emulsion free of solids. (SOF ¶¶57.) Thus, Rosten perpetuates the prior conventional thinking that corn oil extraction should be performed by first removing solids with a first centrifuge before attempting to recover oil. (SOF ¶¶58.) Plaintiffs’ invention, by contrast, demonstrated the advantage of reducing the moisture content of thin stillage including solids prior to corn oil extraction, and the possibility

of doing so with a single centrifuge. (SOF ¶¶12-14.) Rosten therefore teaches away from Plaintiffs' patents.

2. The Prevost Reference

Prevost is similarly deficient. As this Court has recognized, Prevost "teaches away from centrifugation for stillage of any type with a moisture content above 15%." Supp Order on Claim Constr. at 13. Plaintiffs' patents only focus on the centrifugation of thin stillage above that moisture range. *Id.* (unless there is a heating step). Moreover, Prevost adheres to the conventional wisdom that one should centrifuge thin stillage before evaporation, but not thereafter in any of the moisture ranges claimed by the inventions. (Ex. 165, Prevost, at ¶ 14). Again, this recommendation stands in stark contrast with Plaintiffs' patents, which teach post-evaporation centrifugation.

3. The GB'672 Reference

The GB'672 reference fares no better. There, the inventor teaches the extraction of oil from animal systems. (SOF ¶71.) But the reference specifically warns that when the fat content of the animal product is too low, removal of water by evaporation will lead to a concentrate that is too viscous to centrifuge effectively. (SOF ¶72; Ex. 45, GB '672 at 2:78-94.) The GB '672 reference therefore teaches away from pre-centrifugation evaporation of a stream, on the assumption that evaporation will increase viscosity and thus hamper efficiency of the corn oil extraction.

4. The Animal Processing References

Defendants suggest that Plaintiffs' patents are obvious in view of a few decades-old prior art references relating to animal oil processing. But those references are inapposite here. Only analogous prior art can be considered in a Section 103 obviousness inquiry. *In re Klein*, 647 F.3d 1343, 1348 (Fed. Cir. 2011). "Two separate tests define the scope of analogous prior art:

(1) whether the art is from the same field of endeavor, regardless of the problem addressed and, (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved." *Id.* (internal quotation marks and citations omitted). The references relied upon by Defendants fail under either test.

The animal oil processing references identified by Defendants are outside the field of corn oil extraction in an ethanol plant. (SOF ¶ 73.) They are also not pertinent to the problem originally confronted by the inventors. The differences between animal cells and plant cells mean that extraction of oil from corn and extraction of oil from animal cells differ in important ways. (SOF ¶ 74, Ex. 1, Eckhoff Van Gerpen Rep., ¶ 58.) **First**, corn plant cells have a cell wall, and animal cells do not. (SOF ¶ 75.) This means that animal cells are far easier to breach than plant cells – which are more protected and stable. (SOF ¶ 75.) Extracting oil from within the corn cell is therefore that much more difficult to accomplish than extracting oil from an animal cell. *Id.* **Second**, corn contains a large percentage of starch, whereas animal material does not. (SOF ¶ 76.) As a result, thin stillage generally contains residual starch that has not been fermented into ethanol. *Id.* A person of ordinary skill in the art would have understood that the residual starch, when passed through an evaporator in an ethanol plant, could turn to gelatin and cause excessive thickening and emulsification of the concentrated thin stillage. *Id.* The process of oil extraction from animal cells need not take such a consideration into account. **Third**, corn material contains natural emulsifying agents, such as protein and starch, which stabilize the emulsion. (SOF ¶ 77.) Thus, the concentrated thin stillage resulting from ethanol production contains very stable emulsions of oil and water. *Id.* This makes extraction of oil from a corn processing system much more difficult than extracting oil from animal material. *Id.*

A person of ordinary skill in the art would therefore understand that the plant and animal systems are so dissimilar that knowledge of one system would have little relevance to the other. As Dr. Eckhoff explained, “just because it worked on fish meal, or some other type of product, doesn’t mean that it’s going to work for . . . concentrated thin stillage.” (SOF ¶ 78; Ex. 8, Eckhoff Dep. at 349:19-22). Therefore the animal references should be considered nonanalogous for purposes of this Court’s obviousness analysis, and even if considered analogous, they do not lead to predictable results with corn oil extraction. Again, Defendants may disagree, but this is a question of fact that cannot be resolved now.

5. The Lachle Reference

Defendants also suggest that the patents-in-suit are obvious in view of U.S. Patent No. 2,325,327 to Lachle, issued in 1973 (“Lachle”). (Defendants’ Memo In Supp. Of MSJ at 104.) But Lachle, like Rosten, Prevost and GB ‘672, teaches away from Plaintiffs’ patents. The Lachle reference is directed to extracting oil from animal or plant matter. (SOF ¶79; Ex. 51, Lachle p. 1, left col., ll. 7-10.) Lachle discloses in very general terms the extraction of oil from corn, but notes that such a process requires the *addition* of moisture for effective results. (SOF ¶80; Ex. 51, Lachle p. 4, left col., ll. 38-47.) One of ordinary skill in the art would therefore understand Lachle to teach away from Plaintiffs’ patents insofar as those patents disclose the removal of moisture – through evaporation – prior to oil recovery. (SOF ¶81; Ex. 1, Eckhoff Van Gerpen Rep. ¶ 142.)

Lachle also suggests using acids to reduce the starch in the mixture to sugars. (SOF ¶82.) This reduction ensures that the starch cannot act as an emulsifying agent. (SOF ¶82; Ex. 51, Lachle p. 2, left col., line 70 – right col., 4.) One of ordinary skill in the art would therefore understand that the presence of starch – which is found in the ethanol byproducts – would likely complicate oil extraction. (SOF ¶83, Ex. 1, Eckhoff Van Gerpen Rep. ¶143.)

6. The VDT Case Farms System

Defendants also argue that Plaintiffs' patents are obvious in view of the VDT Case Farms system – a poultry processing system. (Defendants' Memo In Supp. Of MSJ at 105.) As a threshold matter, the VDT Case Farm system is not analogous art, and therefore cannot be considered in a Section 103 obviousness analysis. *See In re Klein*, 647 F.3d 1343, 1348 (Fed. Cir. 2011).

But the VDT Case Farm System is also inapposite because it teaches away from the inventions set forth in the patents-in-suit. Broadly speaking, the VDT system involved the processing of DAF sludge – an undesirable byproduct of meat processing plants. (SOF ¶84.) The sludge was heated to 200 degrees Fahrenheit using steam injection, which added moisture and allowed the fat to separate from the product. (SOF ¶85.) The water and product mixture then proceeded to a decanter, where the liquid was separated from the solids. (SOF ¶86.) The liquid portion was then passed through a separator which helped dissociate the fat from the water. (*Id.*; Ex. 54, DX 123 at VDT-000220.) Users could also optionally purchase the VDT Protein Reclamation Project, which involved downstream evaporation of the water generated by the above process to concentrate soluble proteins. (SOF ¶86.)

Thus, the VDT Case Farm System taught away from the patents-in-suit in a number of respects. First, it taught the addition of water – in the form of steam – upstream of the separation step. Second, it removed the solids before centrifugation. Third, it utilized a post-separation centrifugation step. In all three respects, the VDT Case Farm was completely at odds with the teachings of the patents-in-suit. (SOF ¶84-86; Ex. 1, Eckhoff Van Gerpen Rep. ¶¶ 177-178.) The VDT Case Farm System's impact on the validity of the patents-in-suit is therefore a question of fact that cannot be resolved now.

7. The Combination of References

Defendants provide no evidence that the person of ordinary skill would be motivated to combine the references above. Instead, Defendants claim only that the prior art references taught “all the same things” as Plaintiffs’ patents, Def Memo at 100, and vaguely suggest that it would therefore have “made sense” and been “logic[al]” to arrive at Plaintiffs’ invention. *Id.* at 101. These unsupported attorney arguments are insufficient to meet Defendants’ burden to prove invalidity by clear and convincing evidence. *See Alessam, Inc. v. IDT Corp.*, 715 F.3d 1336, 1347-48 (Fed. Cir. 2013) (upholding jury verdict of nonobviousness when defendant failed to introduce expert testimony on motivation to combine). What is more, actually attempting to combine these references would leave the skilled artisan hopelessly confused. Rosten teaches creating an oil/water emulsion before extracting oil; Prevost teaches centrifugation before evaporation or extraction at very low moisture content; GB ‘672 teaches no concentration at all. The person of ordinary skill could divine no clear path from this combination of references.

Defendants may disagree with these conclusions, but the scope and content of the prior art is a fact question. Resolving what these references teach is a question for the jury and cannot be decided until trial.¹⁷

¹⁷ Defendants’ obviousness arguments are belied by their own patents. While they insist in this litigation that the asserted Patents do nothing more than utilize old technology in predictable ways, they have simultaneously sought their own patents on minor variations of Plaintiffs’ methods. *See, e.g.*, US Pat No 7,918,458 B2 (Flottweg patent directed to a method of obtaining oil from an ethanol production facility “and recovering oil from the concentrated syrup, wherein the step of recovering oil from the concentrated syrup includes using a horizontal axis centrifuge.” (abstract; claim 1, col. 6, ll. 11-27)); *see also* US Pat No 8,192,627 B2 (ICM patent directed to a method of recovering corn oil from ethanol plants by “dewatering” a stream to separate a stream with an oil emulsion and then breaking the oil emulsion with a solvent to recover the oil (col 1; ll 13-19)).

IV. THE PATENTS-IN-SUIT ARE NOT INVALID UNDER 35 U.S.C. § 112

Defendants raise three invalidity challenges under 35 U.S.C. § 112. Defendants allege that the patents-in-suit are invalid because (1) they fail to teach one of ordinary skill in the art how to mechanically process a stream containing 15% or 30% moisture; (2) they lack adequate support for the heating step; and (3) the term “substantially” is indefinite. Not only have Defendants failed to support their own Motion for Summary Judgment, but they have failed to raise sufficient disputes of material fact for each of these arguments, and summary judgment in favor of CleanTech is warranted.

A. Defendants Failed to Raise Genuine Issues of Material Fact As To Whether Mechanical Processing of Thin Stillage with 15-40% Moisture Was Possible

Defendants argue that the claims of the patents-in-suit are not enabled, because one cannot use a centrifuge to extract oil from thin stillage with moisture content below 40%. Def Memo 107. The claims require mechanical processing of thin stillage at various moisture contents, and Defendants contend that the lower part of this range—*i.e.*, thin stillage with less moisture—cannot be mechanically processed to extract oil.

Though enablement is a question of law, it is “based on underlying factual inquiries.” *Cephalon, Inc. v. Watson Pharms., Inc.*, 707 F.3d 1330, 1336 (Fed. Cir. 2013). A court must “presume a patent enabled,” such that “the challenger bears the burden, throughout the litigation, of proving lack of enablement by clear and convincing evidence.” *Id.* at 1337. Defendants have not met that burden here. They rely almost entirely on the testimony of Dr. Eckhoff. Def Memo 107. But Dr. Eckhoff ***did not*** testify that a person of ordinary skill could not centrifuge thin stillage with less than 40% moisture content. Instead, Dr. Eckhoff explained that he “had no basis” to opine on the minimum moisture content needed to centrifuge thin stillage, and “it would be pure speculation” for him to assess this. (SOF ¶ 69, Ex. 8, Eckhoff Dep. at 239:20-22,

240:13-15). Nonetheless pressed by opposing counsel on the issue, Dr. Eckhoff guessed that biological systems *generally* require 40% moisture content to avoid plugging the centrifuge. (*Id.*) Unsupported, speculative expert testimony is not “clear and convincing evidence” of nonenablement. *Cephalon*, 707 F.3d at 1338 (holding that expert’s “*ipse dixit* statements” that process would be “complicated” and “very difficult” were not sufficient). Defendants cannot meet their burden with Dr. Eckhoff’s deposition-day speculation.

Defendants also claim that Mr. Winsness’s testimony supports their nonenablement argument. But Mr. Winsness did not say, as Defendants’ claim, that it was impossible to extract oil from thin stillage with moisture content below 30%. Mr. Winsness instead testified it would be “more challenging” and “less cost effective” to centrifuge this thin stillage. (SOF ¶ 69; Ex. 37, Winsness Vol VIII Dep. at 1139:23-1140:3.) However, a patent need not enable a commercially acceptable embodiment unless the claims require it, and the claims here do not. *See CFMT, Inc. v. Yieldup Int’l Corp.*, 349 F.3d 1333, 1338 (Fed. Cir. 2003) (enablement “does not require . . . a perfected, commercially viable embodiment absent a claim limitation to that effect”); *Transocean Offshore Deepwater Drilling, Inc. v. Maersk Con. USA, Inc.*, 617 F.3d 1296, 1307 (Fed. Cir. 2010) (same). Any commercial challenge or extra cost associated with centrifuging low-moisture thin stillage is totally irrelevant to the enablement inquiry.

Besides, even if Dr. Eckhoff’s or Mr. Winsness’s testimony could support a finding that it was impossible to mechanically process low-moisture thin stillage, other record evidence is to the contrary and requires denial of Defendants’ motion for summary judgment. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

REDACTED

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] The testimony of these experts only supports a jury finding that mechanical processing and centrifugation of 15-40% moisture thin stillage is enabled. Defendants' motion for summary judgment should therefore be denied on this topic.¹⁸

B. There Is Adequate Support In The Specification For a Heating Step

Defendants next argue that the '858 Patent lacks an adequate written description of means to accomplish the heating step that takes place after the evaporation step in claims 1-7 and 10-16. (Defendants' Memo In Supp. Of MSJ at 110.) Defendants *do not* argue that the separate heating step itself is not disclosed—nor could they, the specification contains ample support for this step (Ex. 19, '858 Patent 2:23-30; *see also* SOF¶ 23; Ex. 172, '858 Prosecution History at Sept. 15, 2008 Resp. at 6 (describing support for amendment that added heating step)). Instead, they contend only that the '858 Patent does not describe means to heat the thin stillage in that

¹⁸ Defendants have not contested the ability to centrifuge concentrated thin stillage having at least 40% moisture.

step. Whether a specification adequately describes a claim is a question of fact, and just as with the enablement inquiry, it is Defendants' burden to prove that the written description is inadequate by clear and convincing evidence. *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1331 (Fed. Cir. 2003) (affirming district court's ruling of validity after bench trial that defendant's expert testimony merely established lack of written description by a preponderance of the evidence). "[A] patent need not teach, and preferably omits, what is well known in the art." *Streck, Inc. v. Research & Diagnostic Sys., Inc.*, 665 F.3d 1269, 1288 (Fed. Cir. 2012) (applying this rule to enablement analysis); *Falko-Gunter Falkner v. Inglis*, 448 F.3d 1357, 1368 (Fed. Cir. 2006) (same, written description). The '858 Patent discloses a heating step, and Defendants' own expert admit that methods of heating thin stillage were well known in the art. Mr. Reilly testified that one would use "a heat exchanger" and would "[o]f course" have known this by the priority date of the '858 Patent in 2003. (SOF ¶ 23; Ex. 3, Reilly Dep. at 150:6-15.) And the routine use of a heater for this purpose was confirmed by Dr. Eckhoff. (SOF ¶ 23; Ex. 8, Eckhoff Dep. at 393:15-22; Ex. 18, Winsness Decl at ¶ 27.) The '858 Patent therefore did not need to specify such routine information to adequately describe the heating step.

As for Defendants' argument regarding the prosecution history related to the Minowa reference is irrelevant. (Defendants' Memo In Supp. Of MSJ at 110-111.) In December 2008, the PTO rejected pending claims as obvious over Prevost and Minowa. (SOF ¶ 8; Ex. 19, '858 Prosecution History, Final Rejection dated 12/22/2008, at pp. 4-6.) CleanTech responded then:

For reasons discussed above, any disclosed heating [in Minowa] is limited to the whole stillage. There is no heating of thin stillage and thus no evaporation to form a thin stillage concentrate. This is a critical feature because it is believed that the formation of thin stillage concentrate by evaporation frees some of the bound oil within the thin stillage.

(SOF ¶8; Ex. 19, ‘858 Prosecution History, Response at 9.) Thus, CleanTech distinguished its claims over Minowa during prosecution because Minowa does not disclose an evaporation *step* for thin stillage. . (SOF ¶8; Ex. 19, ‘858 Prosecution History, Response dated 2/03/2009, at 6-9.) Defendants acknowledge that a heating *step* is described in the Patents, and limit their argument to whether a device or means is described. (Defendants’ Memo In Supp. Of MSJ at 110 (“There is no support in the specification of the ‘858 patent for any use of means or equipment to apply heat.”)). Whether Minowa disclosed a *device* or *means* for post-evaporation heating was not an issue in the prosecution of the ‘858 patent. This part of the prosecution history is thus entirely irrelevant to Defendants’ arguments.

C. This Court Has Already Determined That “Substantially” Is Sufficiently Definite

Defendants attack the limitations “substantially oil free” and “substantially free of oil” as indefinite. “A claim is invalid as indefinite *only* where it is ‘not amendable to construction’ or is ‘insolubly ambiguous.’” *Deere & Co. v. Bush Hog, LLC*, 703 F.3d 1349, 1359 (Fed. Cir. 2012) (emphasis added). The Federal Circuit has “repeatedly confirmed that relative terms such as ‘substantially’ do not render patent claims so unclear as to prevent a person of skill the art from ascertaining the scope of the claim.” *Id.* (holding “substantially planar” sufficiently definite).

This Court has already considered and rejected Defendants’ argument. On January 29, 2013, this Court issued a Supplemental Order on Claim Construction. (Supp Order on Claim Constr.). The Supplemental Order dealt with the construction of “substantially oil free” and “substantially oil.” *Id.* at 2-3. The Court declined to readdress the Defendants original claim construction arguments that the court’s construction of the term oil as “substantially (meaning largely or mostly) oil” must be further construed to mean a specific percentage of oil. *Id.* at 21. The Court also cited case law that held “substantially,” as used in that case, need not “be made

more definite for the patent to be valid.” *Id.* citing *Seattle Box Co. v. Industrial Crating & Packing, Inc.*, 731 F.2d 818 (Fed. Cir. 1984). Ultimately, the Court held that “the plain meaning of ‘substantially’ in the context in which they are used in the patents . . . of ‘largely or mostly’ ***adequately conveys both the likely amounts*** and that the likely range of equivalents in this case is small.” *Id.* at 23 (emphasis added). Having already found the claims sufficiently definite, this Court need not reconsider the issue.

Even if the Court were to reconsider this argument, Defendants cannot prevail. As with all validity challenges, it is Defendants’ burden to prove that the claims are indefinite by clear and convincing evidence. *Tech. Licensing Corp. v. Videotek, Inc.*, 545 F.3d 1316, 1338 (Fed. Cir. 2008). Defendants were required to provide clear and convincing evidence that a person of ordinary skill could not ascertain the scope of “substantially.” They failed. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Defendants seize on deposition testimony from Plaintiffs’ experts as a means to reargue the meaning of this claim term. Plaintiffs’ expert McKenna, however, testified that he understood “substantially” to mean “mostly or largely.” (SOF ¶ 25; Ex. 13, McKenna Dep. at 146:23-147:1.) Though McKenna did make an offhand comment that the definition was arbitrary, he also testified repeatedly that his understanding of “substantially” was based on a

“common sense” interpretation of the Court’s construction. (SOF ¶ 25; Ex. 13, McKenna Dep. at 122:2-123:8, 124:12-126:14, 130:14-131:3, 146:14-147:1. He also arrived at the 50+ percent understanding after considering the language of the patent specification and the operative claim construction. (SOF. ¶ 25, Ex. 13, McKenna Dep. at 358:13-24.)

As for Plaintiffs’ expert Eckhoff, he was never asked to opine on the meaning of “substantially.” Instead, he simply testified repeatedly that he understood and was relying on the Court’s definition of the term. (SOF ¶ 25, Ex. 8, Eckhoff Dep. at 540:4-8, 543:7-544:11.) Neither Dr. McKenna’s nor Dr. Eckhoff’s testimony therefore clearly and convincingly demonstrates that the term is “insolubly ambiguous.”

Finally, Defendants assert that “substantially” should be reconstrued to mean “99%.” (Defendants’ Memo In Supp. Of MSJ at 113.) The Court has twice rejected setting a specific numerical percentage on “substantially,” Dkt. 169 at 21-22 and Dkt. 748 at 16; it need not consider this argument a third time.¹⁹

V. THE PATENTS-IN-SUIT ARE NOT INVALID FOR INCORRECT INVENTORSHIP

Defendants also assert that the patents-in-suit are invalid for failing to name Mr. Barlage as a co-inventor. Def. Memo 113-117. Patent issuance creates a presumption that the named inventors are the true and only inventors. *Hess v. Advanced Cardiovascular Sys., Inc.*, 106 F.3d 976, 980 (Fed. Cir. 1997). Because “[c]onception is the touchstone of inventorship,” each joint inventor must generally contribute to the conception of the invention. *Burroughs Wellcome Co. v. Barr Lab., Inc.*, 40 F.3d 1223, 1227-28 (Fed. Cir. 1994). One does not qualify as a joint

¹⁹ Incidentally, Defendants’ argument is out of place here, in a motion for summary judgment. This argument is for reconsideration of the Court’s two claim construction decisions that is not appropriately brought at this stage of the case.

inventor by merely assisting the inventor. *Shatterproof Glass Corp. v. Libbey-Owens Ford Co.*, 758 F.2d 613, 624 (Fed. Cir. 1985) (“An inventor ‘may use the services, ideas and aid of others in the process of perfecting his invention without losing his right to a patent.’”) (quoting *Hobbs v. U.S. Atomic Energy*, 451 F.2d 849, 864 (5th Cir. 1971)).

Mr. Barlage himself has stated that he did not contribute to the invention. (SOF 119; Ex. 7, Barlage Dep. at 386:15-25; 396:7-16.) At that time, Barlage was unfamiliar with the ethanol industry and was unaware of what Winsness and Cantrell were trying to accomplish. (SOF ¶¶ 111.) Mr. Barlage had no input into the initial test attempt to separate oil from thin stillage; either Mr. Cantrell or Mr. Winsness provided the instructions. (SOF ¶¶ 111-118, Ex. 7, Barlage Dep. at 134:7-25, 136:16-25).²⁰ At the very least, therefore, Mr. Barlage’s affirmative disavowal of contribution to the invention creates a fact dispute that cannot be resolved on summary judgment.

Defendants rely heavily on certain Greenshift marketing materials, but at most these create a question of fact about Mr. Barlage’s contribution. A jury could rely on other record evidence to find that Mr. Barlage did not contribute to the conception of the invention and is thus not a co-inventor. Mr. Barlage recommended a *different* process for extracting oil from thin stillage—first removing solids and then clarifying the oil/water emulsion with a second centrifuge. (SOF ¶¶ 120-121.) The claimed methods, however, did not adopt this approach. The two-stage process of removing solids from concentrated thin stillage and then recovering oil is not found in any claim of the patents-in-suit. (SOF ¶ 120, Ex. 35, Winsness Vol. VI Dep. and Ex. 36, Winsness Vol. VII at 901:12-902:2, 989:3-990:23.)

²⁰ Tellingly, Defendants fail to identify a single case in which an individual was deemed a patentee over his own objections.

VI. PLAINTIFFS ARE ENTITLED TO PROVISIONAL RIGHTS

Defendants argue that Plaintiffs are not entitled to provisional rights under 35 U.S.C. § 154(d). (Defendants' Memo In Supp. Of MSJ at 123-125.) Section 154(d) provides that a patent owner is entitled to a reasonable royalty for patent infringement that occurred after the publication of a patent application and before the issuance of the patent, from any person who had actual notice of the published patent application. 35 U.S.C. § 154(d)(1). Provisional rights are not available "unless the invention as claimed in the patent is substantially identical to the invention as claimed in the published patent application." 35 U.S.C. § 154(d)(2).

As for the '516, '517, and '484 patents, Defendants assert only that Plaintiffs have not pled any right to provisional remedies. That argument is wrong on the facts and irrelevant under the law. Plaintiffs did plead a right to provisional remedies: Each of Plaintiffs' Complaints conclude in a Prayer requesting: "An award to GS Plaintiff of all remedies available under 35 U.S.C. § 154(d)." (E.g., MDN 673-683, CleanTech's Amended Complaints filed against Defendant's). Whether Plaintiffs sought this relief or not, Fed. R. Civ. P. 54(c) entitles Plaintiffs to "the relief to which [it] is entitled, even if [it] has not demanded that relief in the pleadings. *See also Back Doctors Ltd. v. Metro. Prop. & Cas. Ins. Co.*, 637 F.3d 827, 831 (7th Cir. 2011); *Medisim Ltd. v. BestMed LLC*, 910 F. Supp. 2d 591, 620 (S.D.N.Y. 2012) (holding that there is no requirement to plead entitlement to provisional rights in prayer for relief because "it is well-settled that 'final judgment shall grant all the relief to which a plaintiff is entitled, whether or not demanded in [its] pleadings.'")). If the facts establish a right to provisional remedies, Plaintiffs are entitled to them.

As for the '858 patent, Defendants do not deny that they had actual notice of the published patent applications. Defendants instead argue that the claims in the published patent applications are not "substantially identical" to the claims in the issued patents. Def Memo at

123. The ‘858 patent issued from a patent application originally filed on May 5, 2005 as Serial No. 11/122,859 (the “‘859 application”) and published on February 23, 2006 as U.S. Patent Application Publication 2006/0041152. Defendants broadly claim that Plaintiffs “made numerous substantive amendments” but offer no specific comparison of the claims in the published application to the ‘858 patent. In fact, many of the amendments had little, if any, effect on the scope of the claims that ultimately issued. For example, claim 8 (originally numbered claim 14 in the ‘859 application) of the ‘858 patent contains two amendments: (1) the term “in sequence” was added; and (2) 15% was changed to 30%. The changes are highlighted below:

8. (Original claim 14) A method of recovering oil from thin stillage, comprising, in sequence: evaporating the thin stillage to create a concentrate having a moisture content of greater than ~~15~~30% by weight and less than about 90% by weight; and centrifuging the concentrate to recover oil.

As for claim 1 of the ‘517 patent, it is identical to original claim 14 of the ‘859 application. Defendants do not contest this. Defendants clearly infringed both the original published claims and the ultimately issued claims. Accordingly there is at least a factual issue as to whether the issued claims are substantially identical to the published claims, and whether Plaintiffs are entitled to provisional remedies for each of these claims.

VII. PLAINTIFFS ARE ENTITLED TO A FINDING OF WILLFUL INFRINGEMENT

Defendants argue that they cannot be liable for willful infringement because they have objectively reasonable noninfringement, invalidity and unenforceability arguments. Whether infringement is willful, however, is a question of fact. *Stryker Corp. v. Intermedics Orthopedics, Inc.*, 96 F.3d 1409, 1413 (Fed. Cir. 1996). In particular, a court must address two factual inquiries to determine whether infringement is willful:

[T]o establish willful infringement, a patentee must show by clear and convincing evidence that the infringer acted despite an

objectively high likelihood that its actions constituted infringement of a valid patent. The state of mind of the accused infringer is not relevant to this objective inquiry. If this threshold objective standard is satisfied, the patentee must also demonstrate that this objectively-defined risk (determined by the record developed in the infringement proceeding) was either known or so obvious that it should have been known to the accused infringer.

In re Seagate Tech., LLC, 497 F.3d 1360, 1371 (Fed. Cir. 2007) (en banc) (citation omitted).

“[T]he boundary between unintentional and culpable acts is not always bright.” *SRI Int’l, Inc. v. Adv. Techn. Labs., Inc.*, 127 F.3d 1462, 1465 (Fed. Cir. 1997). A trial court must assess numerous subsidiary fact issues in determining whether infringement is willful: among others, “questions of intent, belief, and credibility” all come into play. *Id.* Plaintiffs have sufficient evidence to support a jury finding of willfulness here, and so this issue is not appropriate for summary judgment.

A. Numerous Facts Will Support a Jury Finding That Defendants’ Conduct Has Been Objectively Reckless

Defendants first argue that “Plaintiffs’] failure to pursue a preliminary injunction is fatal to its request for willfulness damages.” Def Memo, p. 120. This argument has been considered and rejected by other courts in this Circuit. In *Krippelz*, the accused infringers argued that “*Seagate* establishes a categorical rule that a patentee must move for a preliminary injunction in order to recover for willful infringement.” *Krippelz v. Ford Motor Co.*, 675 F. Supp. 2d 881, 897 (N.D. Ill. 2009). The court rejected this reading of *Seagate*, noting that it “did not establish a categorical rule that a patentee must move for a preliminary injunction . . . whether a willfulness claim based on conduct occurring solely after litigation began is sustainable will depend on the facts of each case.” *Id.*

Defendants also argue that their evidence shows that there was not an objectively high risk of infringement. This is, however, a sharply contested issue. Numerous facts would support

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a jury finding of willful infringement. **First**, in February 2005, Plaintiffs announced their oil recovery method and stated that they had patents pending that covered their novel methods, putting Defendants on notice of possible infringement. (SOF ¶¶164-165.) **Second**, Plaintiffs sent Section 154(d) Letters in July and October 2009 that included their published claims, thus explicitly putting Defendants on notice that their conduct infringed. (SOF ¶191.) **Third**, the ‘858 patent issued on October 13, 2009. (SOF ¶6; Ex. 19, ‘858 Patent) **Fourth**, Plaintiffs filed this lawsuit and subsequently provided Defendants with claim charts showing that they infringed. (SOF ¶191; MDN 673, Second Amended Complaint For Patent Infringement Against Cardinal Ethanol, LLC (“Cardinal 2nd Amended Compl.”); Ex. 173, Cardinal Infringement Contentions And **Fifth**, Defendants now admit they infringe under the Court’s claim construction: “Furthermore, defendants advocated for a claimed construction that would have led to most of the defendants being found not to infringe the patented suit. While the court ultimately rejected this claimed construction, the position taken by the defendants was objectively reasonable.” (Defendants’ Memo In Supp. Of MSJ at 121.)

Defendants insist that their evidence of invalidity and unenforceability negates any risk of infringement. But this too is disputed, because each of the arguments that Defendants raise now have been considered and rejected by the PTO. In August 2011, the PTO allowed several of the Plaintiffs’ patent applications that issued into the patents-in-suit over *precisely the same* prior art and invalidity contentions relied upon by Defendants. And the USPTO found the ‘484 patent patentable *after* Plaintiffs brought the misstatement in Cantrell’s first declaration to the Examiner’s attention. (SOF ¶6, Ex. 22, ‘484 patent)

B. Numerous Facts Support a Finding That Defendants Acted Knowing That There Was an Objectively High Risk of Infringement

1. ICM's Indemnification of Its Customers Supports a Finding of Willful Infringement

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] (“evidence of indemnification against the deterrent effects that the patent laws would have on would-be infringers can be relevant to show intent to induce infringement or that infringing activities were undertaken willfully.”).

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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██████████ Accordingly, the ICM group continues to willfully infringe the patents-in-suit. *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1470 (Fed. Cir. 1990) (“intent can be inferred when the primary purpose is to overcome the deterrent effect that the patent laws have on would-be infringers.”).

2. GEA’s Refusal to Operate Without Indemnification Is Also Evidence of Knowledge of an Objectively High Risk of Infringement

GEA will only sell its centrifuges to recover corn oil from concentrated thin stillage if the buyer indemnifies them or has a license from Plaintiffs. (SOF ¶187; Ex. 40, Vick Dep. at 195:18-196:7.) The act of requiring indemnification for sales to customers can only be viewed as an acknowledgment that GEA knows the buyer is infringing the patents-in-suit. GEA is agreeing to make the sale as long as the buyer takes financial responsibility for GEA’s participation in the infringement. This activity at the very least gives rise to a material question of fact with respect to willful infringement on GEA’s part.

CONCLUSION

For all of the reasons stated above, there are questions of fact that preclude entry of summary judgment in Defendants’ favor and their motion should be DENIED. There are no questions of fact that preclude entry of summary judgment in favor of Plaintiffs on the issues of enablement, written description, and definiteness, and Plaintiffs’ motion for summary judgment on those issues should be ALLOWED.

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Respectfully submitted,

Date: November 22, 2013

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CERTIFICATE OF SERVICE

I hereby certify that on November 22, 2013, a copy of the foregoing **PLAINTIFFS' OPPOSITION TO MEMORANDUM OF LAW IN SUPPORT OF DEFENDANTS' JOINT MOTION FOR SUMMARY JUDGMENT OF INVALIDITY AND TO DISMISS PLAINTIFFS' REQUEST FOR PROVISIONAL REMEDIES AND ENHANCED DAMAGES FOR WILLFUL INFRINGEMENT** was filed electronically. Notice of this filing will be sent to the parties by operation of the Court's electronic filing system. Parties may access this filing through the Court's system.

/s/ Michael J. Rye
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